IESE
UNIVERSIDAD DE NAVARRA

GOVERNANCE CHANGES IN
STRATEGIC ALLIANCES:
ANTECEDENTS OF CONTRACTUAL
RENEGOTIATIONS

Jeffrey J. Reuer*
Africa Ariño**

*   Professor of Strategy and Management, INSEAD
** Professor of General Management, IESE

GOVERNANCE CHANGES IN STRATEGIC ALLIANCES: ANTECEDENTS OF CONTRACTUAL RENEGOTIATIONS

Abstract

This study provides an empirical investigation of the incidence and antecedents of contractual renegotiations in strategic alliances. We bring together initial conditions based on transaction cost theory and *ex post* contingencies highlighted by recent conceptual and qualitative research on the evolution of collaborative agreements. The results indicate that firms tend to change the governance of alliances when a misalignment exists between the chosen structure and features of the transaction. Further, we find that asset specificity affects alliance design as well as post-formation governance decisions. Contractual alterations are more likely in the presence of strategic change and when firms employ less extensive *ex post* deterrents in their alliances. We find no evidence that cross-border ventures are any more or less likely to experience contractual renegotiations than domestic alliances. □

GOVERNANCE CHANGES IN STRATEGIC ALLIANCES: ANTECEDENTS OF CONTRACTUAL RENEGOTIATIONS

Introduction

Theoretical and empirical research on alliances has advanced significantly over the past decade. Drawing upon transaction cost economics (e.g., Hennart, 1988), real options theory (e.g., Kogut, 1991), the resource-based view of the firm (e.g., Eisenhardt & Schoonhoven, 1996), network analysis and sociology (e.g., Gulati, 1998), and other disciplines, this research has focused on firms' rationales for alliance investment and their governance decisions. For instance, work on alliance formation has considered research topics such as alliance trends (e.g., Hagedoorn, 1993), the choice between alliances and acquisitions (e.g., Balakrishnan & Koza, 1993), and alternative governance structures for alliances (e.g., Oxley, 1997).

Despite these advances, it is generally recognized that there are limits to such static treatments of alliances and firms' governance decisions. Williamson (1991), for instance, cautions that many alliances may be disequilibrium organizational forms. Developing research on alliance instability and the short life-spans of many alliances appear to bear out this observation (e.g., Beamish, 1985; Franko, 1971; Killing, 1983; Reynolds, 1979; Stuckey, 1983). Doz and Hamel contend that "[m]anaging the alliance relationship over time is usually more important than crafting the initial formal design" (1998: xv). Based on this observation and the fact that firms make governance decisions in alliances not only at the formation stage but after they have been set up, one purpose of our study is to examine firms' governance decisions in the post-formation context.

In fact, the need to study post-formation alliance phenomena has triggered a number of recent studies on alliance termination. Researchers have identified many factors at multiple levels of analysis affecting alliance termination. For instance, environmental factors contributing to alliance termination include changing industry concentration levels (Kogut, 1989), industry demand shocks (Kogut, 1991), and national cultural differences (e.g., Barkema, Bell, & Pennings, 1996; Barkema & Vermeulen, 1997; Park & Ungson, 1997). Other research has examined transaction level features such as opportunism (Park & Russo, 1996) and mode of entry (Li, 1995; Pennings, Barkema & Douma, 1994) as well as partner characteristics such as prior experiences with collaboration (Barkema, Shenkar, Vermeulen, & Bell, 1997), firms' learning abilities (Hamel, 1991), and partners' evolving capabilities (Nakamura, Shaver, & Yeung, 1996).

Thus, the most recent research on alliances has begun to attend to their dynamics; however, this work has primarily focused on the termination stage of inter-firm collaboration rather than on the developmental paths and incremental governance changes that alliances

experience. Many researchers have acknowledged the importance of sociological and dynamic aspects of collaborative processes (Larson, 1992; Ring & Van de Ven, 1994; Gulati, 1995; Jones, Hesterly, Fladmoe-Lindquist, & Borgatti, 1998; Madhok & Tallman, 1998). Similarly, recent conceptual contributions highlight the importance of changing resource commitments (Khanna, Gulati, & Nohria, 1998), the relevance of bargaining power shifts (Inkpen & Beamish, 1997), and the embeddedness of alliances in firms' evolving strategies (Koza & Lewin, 1998). These conceptual developments notwithstanding, little empirical attention has been given to the issue of alliance evolution.

This paper builds upon recent conceptual and qualitative research on alliance processes to empirically investigate governance changes in alliances. Zajac and Olsen (1993) discuss how firms' alliance reconfiguration efforts cause them to cycle back through prior initializing and processing stages. Their treatment of alliance dynamics contrasts prior treatments of alliance adaptation within more linear life-cycle models (see Parkhe, 1996 for a review). Similarly, Ring and Van de Ven (1994) develop a process framework in which alliance evolution consists of iterative sequences of negotiation, commitment, and execution stages. Different formal and informal interactions take place within each of these stages, the outcomes of which partners judge in terms of efficiency as well as equity. Doz (1996) presents a framework of alliance evolution that suggests how initial conditions foster learning along multiple dimensions. As learning occurs, partners re-evaluate the alliance and their adaptability, and readjustments serve to calibrate revised conditions for the partnership. Ariño and de la Torre (1998) integrate this model with Ring and Van de Ven's (1994) model to trace alliances' evolutionary paths and to explore the roles of initial conditions, external shocks, and relationship quality. Kumar and Nti (1998) propose that partners' interaction and absorptive capacities combine to influence realized outcomes, and manifest discrepancies in outcomes or processes contribute to alliance instability.

In the present study, we use econometric analyses to study the incidence and antecedents of contractual renegotiations in strategic alliances based on a survey on Spanish firms' collaborative agreements. One objective of the study is to bring together governance research with recent conceptual and qualitative work on alliance evolution. In particular, we focus attention on two initial conditions –governance misalignment and asset specificity– that prompt firms to make governance changes in their alliances and bear the costs and risks of contractual renegotiations. We also consider two *ex post* contingencies –environmental and strategic change– that potentially bear upon the post-formation dynamics of alliances. Hypotheses on these initial conditions and *ex post* contingencies are developed in the next section.

Results appear in a section following a discussion of the research design. We find that contractual renegotiations tend to stem from initial conditions of governance misalignment and asset specificity, and that strategic change also brings about contractual renegotiations. These findings challenge conventional governance research assuming that a selection environment quickly weeds out theoretically inefficient governance forms before managers intervene. They also show how asset specificity influences firms' governance decisions even after alliances have been formed. Also, they affirm the need to view alliances as embedded within parent firms' evolving strategies. Environmental changes do not appear to affect contractual renegotiations, however, in part because alliances subject to these changes had more extensive contractual safeguards in place. While international research identifies instability in general and contractual renegotiations in particular as distinguishing features of cross-border collaboration (e.g., Blodgett, 1992; Killing, 1983; Yan & Zeng, 1999), we find no evidence that cross-border alliances are any more or less unstable than domestic ones. A concluding section discusses the implications of these findings and offers avenues for future research.

Development of hypotheses

In formulating hypotheses to identify factors that potentially shape governance changes in alliances, we sought to examine key initial conditions identified by governance research and *ex post* contingencies viewed as relevant to alliance evolutionary processes in more recent conceptual and qualitative studies of inter-firm collaboration. Drawing on transaction cost theory, we first discuss the roles of governance misfit and asset specificity. We then turn to environmental and strategic changes that can affect the likelihood of contractual renegotiations in alliances.

Initial Conditions

Since early conceptual research on alliances by authors such as Anderson and Gatignon (1986), Beamish and Banks (1987), and Hennart (1988), transaction cost theory has been one of the dominant paradigms used to study alliances. Based on their work, theoretical research in transaction cost theory, and related perspectives such as internalization theory and the eclectic paradigm (e.g., Buckley & Casson, 1976; Caves, 1996; Dunning, 1988; Teece, 1986; Williamson, 1985), a vast number of studies have investigated firms' alliance investment decisions (e.g., Gatignon & Anderson, 1988; Gomes-Casseres, 1989, 1990; Mitchell & Singh, 1992; Teece, 1992) and their alliance design choices (e.g., Osborn & Baughn, 1990; Oxley, 1997; Pan, 1996; Parkhe, 1993; Pisano, 1989; Shan, 1991).

Because our interest lies in firms' decisions regarding post-formation governance changes, and because the above-mentioned studies have focused solely on firms' *ex ante* governance decisions, it is important to point out two fundamental propositions and assumptions that underlie this body of research. The first is the 'discriminating alignment' proposition of transaction cost theory, which states that the efficiency of a transaction will be enhanced when an alignment exists between the chosen governance structure and the fundamental attributes of the transaction and the broader contracting environment (Williamson, 1985). For instance, Williamson (1991) offers a model portraying how firms choose between market, intermediate, and internalized forms of governance.

Second, and building off the discriminating alignment proposition, empirical studies using transaction cost theory to specify governance models either explicitly or implicitly employ a selection approach to fit (e.g., Drazin & Van de Ven, 1985). By assuming that managers are far-sighted and that inefficient governance decisions are rapidly weeded out by competitive forces (Williamson, 1994: 371), researchers developing reduced form governance choice models proceed to draw efficiency implications from the factors affecting firms' governance decisions, even though costs or performance are not explicitly modeled.

Despite many appealing features of this approach, there are several reasons to believe that misaligned transactions may in fact exist. For example, environmental selection pressures likely vary under different conditions, with inefficient governance structures surviving for longer in more tranquil environments than in more competitive contexts. Moreover, firms with slack financial resources may be in a position to sustain inefficient structures for some period of time. Thus, it is plausible that misaligned transactions exist and, as we discuss below, that a firm may seek to adjust a misaligned transaction to enhance efficiency.

Two scenarios arise for a misaligned collaborative agreement that may prompt firms to alter the alliance's governance mechanisms. In the first instance, 'excessive' governance is put in place for a comparatively simple exchange relationship. For instance, a firm may use

an equity alliance when a non-equity arrangement would suffice. In such circumstances, the incentives provided by shared equity and the control and monitoring rights provided by a joint board may not be necessary to achieve coordination (Borys & Jemison, 1989; Pisano, 1989). The result of excessive governance, therefore, can be politicized or slow decision-making and higher bureaucracy costs (Williamson, 1985, 1991).

In the second instance, 'insufficient' governance is put in place for a more complex exchange relationship. For instance, a firm may use a non-equity arrangement to govern an alliance in which the threat of opportunism is significant. In this case, the incentives and control provided by equity would be valuable (Oxley, 1997). A firm in an alliance lacking adequate governance mechanisms or safeguards can be exposed to *ex post* contractual hazards such as hold-up risks and moral hazard (Williamson, 1985, 1991).

Due to governance misalignment costs such as these, the firm may seek to alter the relationship to better fit the needs of the collaborative agreement and the environment in which it is situated. Although firms will likely anticipate many of the contractual hazards and problems inherent in a collaborative relationship at the alliance design stage (Williamson, 1994), one also expects that some firms will make governance mistakes, and some firms will learn about the exact nature of their collaborative challenges after the alliance has been formed. Thus, based on the fundamental discriminating alignment proposition and the selection approach to fit discussed above, we are interested in examining whether contractual alterations are in fact responsive to governance misfit, indicating whether firms exercise discretion in modifying the governance structures of their alliances.

Hypothesis 1: The likelihood of contractual renegotiation will be positively related to governance misfit

While it is important to recognize that firms' governance decisions need not be once-and-for-all propositions that take place at the alliance design stage, it is also important to recognize that changing alliances over time involves costs and risks (e.g., Macaulay, 1963; Ring & Van de Ven, 1992; Williamson, 1985). For instance, at the limit, the costs involved in attempting to alter an alliance –legal fees, reorganization expenses, opportunity costs due to management time, reputation costs, and so forth– may outweigh the benefits from bringing a governance structure into better alignment. To the extent that costs such as these are significant relative to efficiency gains, it might be better for the firm to allow the transaction to persist in misalignment rather than attempting to alter its governance structure.

It follows, therefore, that firms will be selective when making governance changes in strategic alliances. If the firm has made minimal transaction-specific investments in the alliance, it may be difficult to justify incurring *ex post* costs to renegotiate and adapt the alliance. By contrast, for alliances to which the firm makes significant resource commitments that are not fully redeployable, the firm has an incentive to monitor the alliance more closely and also to bear renegotiation costs to adapt the alliance. Firms making transaction-specific investments are also subject to a partner's demands for change, which may be motivated by a recognition that gains from hold-up are possible (Williamson, 1985).

Hypothesis 2: The likelihood of contractual renegotiation will be positively related to asset specificity

Ex Post Contingencies

The previous hypotheses considered two initial conditions highlighted by transaction cost theory that shape firms' desire to change the governance of alliances. Governance misfit prompts firms to alter alliances to enhance efficiency, and firms are more likely to be willing to bear the costs of renegotiation when they have made transaction-specific investments in an alliance. Recent qualitative research on the evolutionary processes of alliances would suggest that *ex post* contingencies may also bring about contractual renegotiations. We focus in particular on the roles played by environmental and strategic changes.

Conceptual research on alliance processes contends that environmental changes affect the dynamics of an alliance by altering parent firm's assessments of an alliance's value and perceptions of equity. Zajac and Olsen (1993), for instance, suggest that changes in the alliance's environment lead to changes in the value of an alliance, prompting firms to transition from a processing stage to a reconfiguring stage, and then back through initializing and processing stages. Likewise, Ring and Van de Ven (1994) emphasize that legal and psychological contracts set the stage for the execution of the alliance through role and personal interactions. Partners' commitments and alliance execution change over time based on partners' assessments of efficiency and equity. Assessments along these dimensions may be altered by a change in the alliance's environment, stimulating negotiation and commitment processes anew.

Recent qualitative research also suggests that environmental change may contribute to contractual renegotiations in alliances. Doz's (1996) model identifies a number of initial conditions (i.e., task definition, partners' routines, interface structure, and expectations) that facilitate or hamper learning on five dimensions –environment, task, process, skills, and goals. This learning leads to re-evaluations of efficiency, equity, and adaptability, contributing to readjustments and revised conditions. In his model, the environment is a source of learning, and shifts in the environment therefore bring about new opportunities for learning and contribute to new adjustment cycles. Ariño and de la Torre (1998) trace out various learning-action-reaction paths for alliances and the specific decision rules followed by collaborators in making adjustments. For instance, they note that external changes trigger adjustment processes to restore equilibrium in equity and efficiency conditions.

Based on the arguments of conceptual research on alliance processes and the findings from qualitative studies of alliance evolution, we wish to test the following hypothesis:

Hypothesis 3: The likelihood of contractual renegotiation will be greater when a change in the environment affects the alliance

This research also emphasizes that changes in a firm's strategy can contribute to adjustment in alliances. In Zajac and Olsen's (1993) model, the redefinition of strategy leads firms to cycle back through initializing and processing stages. In Doz's (1996) framework, changes in strategy can alter the value of alliance learning along the five dimensions he identifies, leading partners to revise their expectations of efficiency, equity, and adaptability. Ariño and de la Torre (1998) discuss how the emergence of overlap in two parent firms' competitive strategies and the joint venture's call for greater coordination with one firm triggered readjustment in the alliance they studied.

Recent conceptual research also highlights the importance of strategic change to the dynamics of alliances. For instance, in Kumar and Nti's (1998) outcome and process discrepancy model of alliance dynamics, shifts in strategy potentially contribute to outcome discrepancies relating to the firm's ability to achieve its economic and learning objectives. Koza and Lewin (1998) emphasize that alliances are embedded in the strategies of parent firms and, as such, need to be understood and studied as a component of firms' adaptation choices over time. If alliances co-evolve with firms' strategies as they suggest, then alliance adjustments such as contractual renegotiations should be associated with changes in strategy.

Hypothesis 4: The likelihood of contractual renegotiation will be greater when a change in the firm's strategy affects the alliance

Methodology

Data

Sample. In order to identify a target population of collaborative agreements for this study, we examined Funk and Scott's Countries Index – Europe to identify Spanish firms engaging in alliance activity. Firms engaging in 674 dyadic alliances were identified, but due to financial and time constraints our data collection efforts focused on those industries most active in alliances, which provided a total of 346 firms engaging in 436 alliances. The target informant was the person most directly related to the alliance. Sacrificing quantity for quality, we sent out questionnaires only to those firms in which this person could be clearly identified (see Table 1). Of the 189 surveys mailed, we received 91 responses, which represents a 48 percent response rate. We attribute this high response rate to the care taken in identifying the appropriate respondent and to the follow-up procedure used (Dillman, 1978), which included supplemental phone calls. As an indication of the competence of key informants, over 63 percent of the respondents had participated directly in the negotiation of the alliance in question, and on average they had been involved in the alliance for 4.9 years.

Table 1. Industries and Responses

Industry Description	Number of surveys mailed	Percentage of total mailed	Number of responses	Percentage of responses
Energy (petroleum and electricity)	19	0.1	6	6.6
Chemicals	15	7.9	14	15.4
Machinery except electrical	7	3.7	5	5.5
Electronic equipment	7	3.7	4	4.4
Transportation equipment	5	2.6	4	4.4
Transportation	8	4.2	6	6.6
Communications	2	1.1	0	0.0
Financial services	95	50.3	37	40.6
Other services	31	16.4	15	16.5
Totals	189	100.0	91	100.0

In order to examine potential nonresponse bias, we assessed possible differences in alliance industries and in firm size, measured by the number of employees, between early and late respondents under the assumption that late respondents are more similar to non-respondents than early respondents are to non-respondents (Armstrong & Overton, 1977). An analysis comparing the sectoral distribution of alliances for early and late respondents yielded an insignificant Chi-square value of 8.54 (180 d.f., p = 0.29), and a one-way ANOVA for firm size across these groups gave an insignificant F-value of 0.67 (i.e., 86 d.f., p = 0.42). After accounting for missing data, 80 alliances were available for analysis. Additional descriptive statistics on the sample appear in the results section.

Survey instrument. Preliminary versions of the questionnaire were reviewed by business scholars to ensure face validity. The survey was then translated into Spanish and reviewed by two Spanish-speaking researchers. The translated survey was pre-tested with six Spanish executives experienced in managing alliances, and several changes were made after the pre-testing stage. The final Spanish version was reverse translated into English by a person unfamiliar with the study, and there was a high degree of correspondence between the Spanish and English versions.

Although our dependent variable (i.e., based on whether or not the alliance experienced a contractual renegotiation) is an objective indicator of alliance change, we sought to address the effects of consistency artifacts and possible common method bias. First, we arranged the questionnaire items so that the subjective items appeared prior to the question on contractual renegotiation (Salancik & Pfeffer, 1977). Second, we used Harman's (1967) single-factor test to examine whether a significant amount of common method variance exists in the data. If so, a factor analysis of all of the variables will generate a single factor or a general factor that accounts for most of the variance. Unrotated factor analysis using the eigenvalue-greater-than-one criterion revealed four factors, and the first factor explained only 17.9 percent of the variance in the data. Thus, we concluded that the analysis was not subject to common method bias.

Model Specifications and Measures

Model specification. The basic structure of the models testing antecedents of contractual renegotiation is as follows:

(1) Contractual Renegotiation = $\gamma_0 + \gamma_1$ Governance Misfit + γ_2 Asset Specificity
$\qquad +\gamma_3$ Environmental Change + γ_4 Strategic Change
$\qquad +\gamma_5$ *Ex Post* Deterrents + γ_6 Cross-Border
$\qquad + \gamma_7$ Alliance Age + ε.

Contractual renegotiation. We determined whether the parent firm altered its collaborative agreement by asking respondents whether the initial contract was renegotiated during the course of the alliance. Contractual Renegotiation therefore takes on a value of one if the alliance agreement was altered, and zero otherwise.

Initial condition variables. The first explanatory variable we considered is the degree of misalignment between the firm's choice of alliance governance structure and the attributes of the alliance as well as its broader contracting environment. Following prior research by Anderson (1988) and Silverman, Nickerson, and Freeman (1997), we measured governance misfit by employing a governance choice model to determine how firms' actual alliance design decisions correspond with those implied by transactional features (see equation (2) below). First, we needed to partition the alliance portion of the governance

continuum (e.g., Hennart, 1993), so we followed prior work distinguishing equity from non-equity agreements (e.g., Gulati, 1995, Osborn & Baughn, 1990; Pisano, 1989, 1990). Thus, Equity assumes a value of one for equity alliances, and zero for contractual alliances. While alternative taxonomies might be employed, there is no consensus on this issue, and non-equity and equity alliances have different governance properties, the latter offering control and incentives provided by joint board oversight and residual claimancy (Hennart, 1988; Chi, 1994). Governance Misfit was then defined as $1 - p$ for an equity alliance, and p for a non-equity alliance, where p is the probability estimate for an equity alliance, which was modeled using the following specification:

(2) Equity = $\beta_0 + \beta_1$ Asset Specificity + β_2 Potential Partners + β_3 Prior Ties
$\qquad\quad + \beta_4$ Cross-Border + β_5 Firm Size + ε.

While our interest centers on the effects of governance misfit on the likelihood of contractual renegotiations in alliances (i.e., as portrayed in equation (1)), we will first discuss this model and its constituent variables. We then turn to the other explanatory variables that appear in the model for contractual renegotiations.

Asset Specificity was constructed as an unweighted index based on four indicators, each of which was measured on a five-point scale ranging from negligible to substantial: "Our investment in dedicated personnel specific to this venture is…," "Our investment in dedicated facilities to this venture is…," "If we decided to stop this venture, the difficulty we would have in redeploying our people and facilities presently serving the venture to other uses would be…," and "If this venture were to dissolve, our non-recoverable investments in equipment, people, etc. would be…" (e.g., Anderson & Weitz, 1992; Parkhe, 1993). With a Cronbach alpha of 0.73, this index for asset specificity demonstrated satisfactory reliability (Nunnally, 1978). Because asset specificity increases hold-up risks (Klein, Crawford, & Alchian, 1978) and more hierarchical, equity-based alliances will be appropriate relative to purely contractual collaborations under these conditions (Williamson, 1991), we expect a positive coefficient for Asset Specificity in the governance choice model. This variable also represents our second initial condition variable used in the contractual renegotiation model.

Potential Partners was measured as the number of other available alliance partners. Specifically, respondents were asked to indicate the number of firms with the necessary skills that are available to carry out the same activity. This variable was measured on a four-point scale (i.e., 1 corresponds to none, 2 to 1-2, 3 to 3-10, and 4 to more than 10). The Potential Partners variable therefore serves as an inverse proxy for small numbers bargaining. As the number of potential partners decreases, the firm is more exposed to contractual hazards such as moral hazard and hold-up since switching partners is difficult and costly (Williamson, 1975). In such instances, the control and incentives provided by equity can prove valuable, so we expect a negative coefficient for Potential Partners in the governance choice model. Pisano (1989) provides supporting evidence: In the biotechnology industry, the likelihood that firms will use equity alliances rather than pure contracts declines as the number of potential partners increases.

Prior Ties captures whether or not the collaborators had prior alliances with each other. Therefore, Prior Ties equals one if the partners had a prior collaborative agreement together, and zero otherwise. Partners who have had prior alliances are thought to exhibit greater trust (Gulati, 1995) and, given a lower threat of opportunism, they are able to rely on less complex governance arrangements to achieve their alliance objectives (Williamson, 1979). Prior ties can also promote the development of relational capabilities (e.g., Dyer & Singh, 1998) that can substitute for more formal governance mechanisms. Thus, we expect that Prior Ties will have a negative coefficient in the governance choice model.

To account for broader features of the contracting environment, we introduced a control for whether or not the alliance is cross-border or domestic. The variable *Cross-Border* takes on a value of one if the two partners are from different countries, and zero otherwise. Gulati (1995) suggests that international alliances are more apt to be structured as equity alliances than contractual agreements because greater information is available about domestic firms, reputational consequences of opportunism are more severe in the domestic setting, and character-based trust (Zucker, 1986) emerges between firms that are socially similar.

Finally, to address parent firm resources and other potential influences at the firm level, we incorporated *Firm Size* as a control variable. Respondents were asked to indicate the number of employees in their firm on a 7-point scale (i.e., 1 corresponds to less than 50, 2 to 51-150, 3 to 151-250, 4 to 251-500, 5 to 501-1000, 6 to 1001 to 5000, and 7 to more than 5000).

Ex Post Contingency Variables. Our third and fourth hypotheses considered the possible effects of *ex post* shifts in the venture's environment and changes in the firm's strategy on the likelihood of contractual renegotiations. Respondents indicated whether or not there had been any changes in the venture's environment (i.e., Environmental Change) or in the firm's strategy (i.e., Strategic Change) that substantially affected the venture.

Control variables. While we sought to develop a parsimonious model of factors potentially influencing contractual renegotiations in alliances, we also wanted to control for relevant contingencies that might influence alliance dynamics and might be related to an alliance's initial conditions or *ex post* contingencies considered in the hypotheses.

First, because firms may employ contractual safeguards to mitigate moral hazard and hold-up risks and to avoid renegotiations, we employed a measure of *ex post* deterrents developed by Parkhe (1993). This measure is constructed based on a checklist of contractual safeguards obtained from a computer-aided search of the legal literature (e.g., Macneil, 1978, 1981; Narasimhan, 1989; Practicing Law Institute, 1986). Specifically, respondents were asked to indicate which contractual safeguards were put into the agreement: 1) periodic written reports of all relevant transactions; 2) prompt written notice of any departures from the agreement; 3) the right to examine and audit all relevant records through a firm of CPAs; 4) designation of certain information as proprietary and subject to confidentiality provisions of the contract; 5) non-use of proprietary information even after termination of agreement; 6) termination of agreement; 7) arbitration clauses; and 8) lawsuit provisions. With these safeguards arrayed in increasing order of stringency as shown, the composite index was constructed as follows:

$$(3) \quad \textit{Ex Post} \text{ Deterrents} = \frac{1}{36} \sum_i D_i,$$

where D_i equals i if the ith safeguard was employed, and zero otherwise (e.g., one if the first safeguard was employed, zero otherwise; two if the second safeguard was employed, zero otherwise; etc.). Thus, the variable *Ex Post* Deterrents is a continuous measure ranging from zero to one and increasing in the level of contractual safeguards in the alliance.

Second, we controlled for whether the alliance was a cross-border or domestic collaboration. Instability is regarded as a distinguishing feature of international alliances (e.g., Inkpen & Beamish, 1997; Parkhe, 1991), yet empirical research provides mixed evidence on the instability of international alliances (e.g., Barkema, Bell, & Pennings, 1996; Barkema & Vermeulen, 1997; Park & Ungson, 1997). While prior research has assessed the termination of cross-border collaborations, we wish to examine whether cross-border alliances are more or less likely to experience contractual alterations, which can be seen as instability of a more incremental variety.

Finally, we controlled for the age of the alliance, measured in years. Older alliances are more likely to be subject to different sources of instability (Kogut, 1988), and it is also important to control for the opportunities a firm has had to make adjustments in the contractual agreement. Incorporating a control for alliance age also helps to control for other effects at the alliance level.

Results

Table 2 presents descriptive statistics and a correlation matrix for variables appearing in the governance choice model. Forty-five percent of the collaborative agreements were equity alliances, and twenty percent of the collaborators had prior alliances with each other. A majority of the alliances, 84 percent, were cross-border collaborations. The median firm had between 501 and 1000 employees. The bivariate results suggest that firms will choose equity alliances over non-equity agreements when asset specificity ($p < 0.01$) is substantial and when firms have collaborated in the past ($p < 0.05$). However, it is also apparent that large firms tend to make lower levels of transaction-specific investments in their alliances ($p < 0.01$), and firms are more likely to partner with firms with which they have collaborated in the past in contexts in which many other prospective partners are present ($p < 0.01$). Thus, multivariate analysis is needed to examine the partial effects of the explanatory variables. The correlations among the explanatory variables also raise the question of whether multicollinearity is present, yet the maximum variance inflation factor (VIF) for variables in the governance choice model is 1.17, well below the accepted rule of thumb value of ten indicating multicollinearity problems (Neter, Wasserman, & Kutner, 1985).

Table 2. Descriptive Statistics and Correlation Matrix for
Variables in the Governance Choice Model [a]

Variable	Mean	S.D.	(1)	(2)	(3)	(4)	(5)
(1) Equity Alliance	0.45	0.50	–				
(2) Asset Specificity	9.21	3.35	0.32 **	–			
(3) Potential Partners	2.83	1.03	–0.06	–0.06	–		
(4) Prior Ties	0.20	0.40	0.24 *	0.06	0.30 **	–	
(5) Cross-Border	0.84	0.37	–0.08	0.04	0.02	0.05	–
(6) Firm Size	4.40	2.13	0.02	–0.32 **	0.14	0.17	0.08

[a] N = 80. † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 3 presents estimation results for the governance choice model used to calculate the governance misfit variable. The model is significant on an overall basis ($p < 0.001$). The parameter estimates are consistent with the fundamental predictions of transaction cost theory: Firms adopt equity structures when making transaction-specific investments ($p < 0.01$) and when few alternative partners are available to provide the option to switch ($p < 0.05$). Contrary to prior research on the role of trust in alliances, the findings suggest that equity structures are more prevalent among firms that have collaborated in the past ($p < 0.01$), and cross-border alliances are no more or less likely to be equity structures than domestic collaborations.

Table 3. Governance Choice Model Estimation Results [b]

Independent Variable	Dependent Variable: Equity Alliance
Intercept	–0.72 (0.83)
Asset Specificity	0.16 ** (0.05)
Potential Partners	–0.39 * (0.17)
Prior Ties	1.15 * (0.45)
Cross-Border	–0.51 (0.42)
Firm Size	0.10 (0.08)
χ^2	20.51 ***

[b] $N = 80$. Standard errors appear in parentheses. Positive coefficients indicate that increases in the variable raise the likelihood of an equity structure (i.e., Equity Alliance = 1) vis-à-vis a non-equity structure (i.e., Equity Alliance = 0). † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Descriptive statistics and a correlation matrix for variables in the contractual renegotiation model appear in Table 4. One-fifth of the sampled alliances underwent a contractual renegotiation. Likewise, twenty percent of the alliances were subject to an environmental change that substantially affected the collaboration. Fewer alliances, ten percent, were subject to a strategic change by a parent firm. As one would expect, these changes were more likely to occur for older alliances (both $p < 0.01$), and older alliances were also more likely to experience contractual renegotiations ($p < 0.01$). As before, we assessed VIFs to check for multicollinearity, but the maximum VIF of 1.29 for variables appearing in the contractual renegotiation models provided no evidence of such problems.

Table 5 presents estimates for factors influencing contractual renegotiation in alliances. Model I presents a baseline specification consisting of the three control variables only. Model II adds the explanatory variables for initial conditions and *ex post* contingencies. Both models are significant on an overall basis ($p < 0.05$ and $p < 0.001$, respectively), and Model II provides a significant improvement in explanatory power over Model I ($p < 0.001$). Further, likelihood ratio tests indicated that Model II represents a significant improvement in explanatory power relative to a model that incorporates only the controls and initial conditions ($\chi^2 = 7.21$, $p < 0.05$) and relative to a model that incorporates only the controls and *ex post* contingencies ($\chi^2 = 17.75$, $p < 0.001$).

**Table 4. Descriptive Statistics and Correlation Matrix for
Variables in the Contractual Renegotiation Model [c]**

Variable	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Contractual renegotiation	0.20	0.40	–						
(2) Governance Misfit	0.39	0.20	0.20 †	–					
(3) Asset Specificity	9.18	3.47	0.31 **	–0.12	–				
(4) Environmental Change	0.20	0.40	0.29 *	–0.04	0.14	–			
(5) Strategic Change	0.10	0.30	0.31 **	0.13	–0.07	0.19	–		
(6) *Ex Post* Deterrents	0.46	0.33	–0.09	–0.06	0.16	0.23 †	0.15	–	
(7) Cross-Border	0.83	0.38	0.13	–0.15	0.05	0.13	0.15	0.16	–
(8) Alliance Age	3.89	4.79	0.32 **	–0.003	0.05	0.35 **	0.37 **	0.19	0.16

[c] $N = 71$. † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5. Antecedents of Contractual Renegotiations in Strategic Alliances [d]

Variable	Model	Model II	Model II
Intercept	–1.40 * (0.51)	–5.62 *** (1.59)	–5.52 *** (1.62)
Ex Post Deterrents	–0.95 (0.60)	–2.48 * (1.05)	–2.69 * (1.09)
Cross-Border	0.51 (0.58)	0.49 (0.71)	0.44 (0.73)
Alliance Age	0.13 † (0.07)	0.15 † (0.09)	0.13 (0.09)
Governance Misfit	–	3.10 * (1.47)	–
Governance Overfit	–	–	3-34 * (1.51)
Governance Underfit	–	–	1.76 (1.81)
Asset Specificity	–	0.29 ** (0.10)	0.31 ** (0.10)
Environmental Change	–	0.78 (0.59)	0.80 (0.62)
Strategic Change	–	1.62 * (0.73)	1.74 * (0.77)
χ^2	9.40 *	33.59 ***	35.38 ***
Log Likelihood. $L(\beta)$	–30.55	–18.45	–17.56
$-2[L(\beta_I) - L(\beta)]$	–	24-20 ***	25-98 ***
$-2[L(\beta_{II}) - L(\beta_{III})]$	–	–	1.78 (n.s.)

[d] $N = 71$. Standard errors appear in parentheses. Positive coefficients indicate that increases in the variable raise the likelihood of contractual renegotiation (i.e., Contractual Renegotiation = 1). † $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

It is worth noting that Model II restricts the effects of excessive or insufficient governance to be equal. As noted earlier, governance "overfit" occurs when the firm adopts an equity governance structure for relatively simple transactions, and governance "underfit" occurs when the firm adopts a non-equity governance structure in the face of contractual hazards. Since the effects of governance overfit and underfit may or may not be symmetric empirically, Model III offers an unconstrained specification that disaggregates governance misfit into these two components. In particular, for equity alliances Governance Overfit is defined as $1 - p$ and Governance Underfit as zero, while for non-equity alliances Governance Overfit is defined as zero and Governance Underfit as p (i.e., Governance Overfit + Governance Underfit = Governance Misfit). As such, if γ_1 is the coefficient for Governance Misfit in Model II, and γ_1' and γ_1" are the coefficients for Governance Overfit and Governance Underfit, respectively, in Model III, a likelihood ratio test comparing Models II and III assesses whether excessive governance and insufficient governance affect alliances equally (i.e., γ_1' = γ_1" = γ_1). The insignificant test statistic (i.e., $\chi^2 = 1.78$, n.s.) suggests that the effects of excessive and insufficient governance on the likelihood of contractual renegotiation are equivalent, so the restricted specification appearing as Model II is appropriate.

In addition to separating out the potential effects of excessive and insufficient governance, we performed supplementary tests to test the sensitivity of the results and alternative specifications relative to Model II. These tests explored whether initial conditions and *ex post* contingencies affect the likelihood of contractual change independently or interactively. One might anticipate, for instance, that the influence of asset specificity is exacerbated by an exogenous shock or that governance misfit becomes more problematic when the firm is undergoing a strategic change. However, separate tests indicated that environmental change does not moderate the effects of asset specificity (i.e., $p = 0.19$) or governance misfit (i.e., 0.44) nor does strategic change (i.e., $p = 0.89$ and $p = 0.68$, respectively). These tests supported the modeling of initial conditions and *ex post* contingencies as main effects.

Our first hypothesis suggested that firms will tend to renegotiate alliance contracts when a misalignment is present between the chosen alliance governance structure and the attributes of the transaction and the contracting environment. The results bear out this prediction as governance misfit relates positively to the likelihood of contractual renegotiation ($p < 0.05$).

The second hypothesis suggested that the likelihood of contractual renegotiations will increase with asset specificity. The results provide support for this prediction. The greater the transaction-specific investment made in the alliance, the greater the odds are that partners will alter the collaborative agreement after forming the alliance ($p < 0.01$).

The remaining hypotheses considered the potential influence of *ex post* contingencies on alliances' post-formation governance changes. Firms appear to be no more or less likely to alter the contracts of alliances subject to environmental change (i.e., hypothesis three) yet, consistent with hypothesis four, firms are more likely to renegotiate alliances when there has been a strategic change affecting the collaborative agreement. One possible explanation for the lack of significance for the environmental change variable is that firms tend to have put in place *ex post* deterrents for such ventures ($p < 0.10$), and firms using contractual deterrents are less likely to alter collaborative agreements ($p < 0.05$).

Finally, the remaining controls deserve some comment. While prior research has often considered instability in general and contractual renegotiations in particular to be important aspects of international collaboration, we find no evidence that cross-border

ventures are more likely to experience contractual renegotiations than domestic alliances. There is, however, modest evidence that older alliances are more likely to experience contractual alterations ($p < 0.10$) after controlling for other explanatory factors.

Discussion

Our finding on the incidence of contractual renegotiations indicates the relevance of studying post-formation governance changes in alliances. As noted in the introduction, alliance research historically has attended to issues surrounding the formation of collaborative agreements and recently has begun to study alliance dynamics by investigating alliance termination. Intermediate phenomena relating to governance changes in alliances have been subject to comparatively little investigation, however. Our focus is on one type of governance change in alliances, contractual renegotiations, so future research might examine other formal or informal means by which parent firms alter their collaborative agreements. It would also be valuable to investigate the decisions and tradeoffs firms make regarding the ways in which they adapt their collaborative relationships because multiple tools are at their disposal (e.g., control changes, personnel changes, equity changes, etc.).

To study the antecedents of contractual renegotiations in alliances, we brought together initial conditions and *ex post* contingencies discussed in disjunct streams of alliance research. The empirical evidence indicates that both initial conditions –highlighted by transaction cost theory– and *ex post* contingencies –highlighted by recent conceptual and qualitative research on alliance evolution– bear upon the post-formation governance changes in alliances. Thus, both perspectives on alliances contribute to the understanding of contractual renegotiations in collaborative agreements. Just as there is a need to consider other types of alliance adaptation in future research, opportunities exist to investigate other factors identified by these or other perspectives that influence the trajectories that alliances follow. Work in both directions may ultimately lead to a typology of alliance adaptation, matching the research and understanding that now exists on alliance formation and alliance design issues.

Our study has theoretical implications for the individual perspectives employed to understand the antecedents of contractual renegotiations. For transaction cost theory, the findings show that firms alter alliance contracts in response to governance misalignment. Although transaction cost treatments of firms' governance decisions explicitly or implicitly assume that a selection environment exists that is sufficiently strong to weed out theoretically inefficient organizational forms (e.g., Williamson, 1991, 1994), we find that misaligned governance structures exist and that managers intervene to alter their alliances' governance mechanisms. Although the effects of contractual hazards attending non-equity alliances need not be equivalent to the effects of equity structures' governance costs, we found that governance underfit and overfit have the same implications for contractual renegotiations.

Our empirical evidence also reveals that asset specificity has an impact on firms' governance decisions at the alliance formation stage as well as during post-formation stages of collaboration. While prior research has investigated the implications of asset specificity for alliance design (e.g., Oxley, 1997; Pisano, 1989), our results demonstrate that the effects of asset specificity extend beyond alliance formation into firms' collaborative relationships. Moreover, the fact that firms renegotiate alliances in which they have made transaction-specific investments suggests that firms selectively renegotiate collaborative relationships that are worth the costs of adjustment. This finding also suggests that such changes in

alliances may be outcroppings of hold-up problems. Along similar lines, the results indicate that contractual renegotiations tend to occur in alliances with less extensive *ex post* deterrents.

Consistent with conceptual and qualitative research on alliance evolution, we find that *ex post* contingencies also exert an influence on the likelihood of contractual renegotiations. Specifically, alliances are likely to experience contractual alterations when a strategic change affects the collaborative relationship. This finding is consistent with the perspective that alliances should be viewed within the context of parent firms' evolving strategies (Koza & Lewin, 1998). Similarly, research on alliances' developmental processes identifies a number of mechanisms by which strategic change may affect alliances. For instance, Doz (1996) discusses alliance evolution from the perspective of parent firms' learning along multiple dimensions. Kumar and Nti (1998), by contrast, indicate that shifts in strategy potentially contribute to outcome or process discrepancies leading to alliance adjustments. Hence, the findings indicate the relevance of strategic change but, due to the coarseness of our *ex post* contingency measures, we cannot draw conclusions on the dimensions of strategic change or the precise mechanisms that appear to be most important. With this limitation in mind, our results suggest that strategic change appears to be more influential than environmental change, but future research is also needed to examine specific dimensions of environmental change that affect alliances in different collaborative contexts (e.g., currency shifts in cross-border alliances, the resolution of technological uncertainty in biotech ventures, political or legal changes in developing countries, etc.).

Our results also show that cross-border ventures are no more or less likely to experience contractual renegotiations than domestic alliances. This finding contrasts with prior arguments and evidence that cultural dissimilarities are often the root cause of alliance instability (e.g., Barkema & Vermeulen, 1997) and that trust accumulates more readily in domestic alliances (e.g., Gulati, 1995). However, our results are broadly consistent with Park and Ungson's (1997) finding that cross-border ventures with partners from culturally-distant countries are more stable. Additional research using different base samples is needed to explore the generalizability of our evidence and examine potential differences in the negotiation and renegotiation of alliances in domestic and cross-border contexts.

Finally, our findings confirm the importance of controlling for alliance age in future studies on the dynamics of inter-firm collaboration. Kogut (1988) suggests that the conclusions drawn from many studies of alliance instability are suspect because of the failure to account for the age distribution of sampled alliances. In the present study, for instance, we found that alliances subject to strategic or environmental changes tended also to be the older ones. Because our focus is on the incidence and antecedents of contractual renegotiations, or more evolutionary governance changes in alliances, extensions could examine whether such governance changes affect the likelihood or timing of termination and the means by which alliances come to an end.

In attempting to bring together and extend research on governance design and recent work on alliance evolution, our study has other limitations that might be addressed in future work. First, recent conceptual and qualitative research on alliance evolution (e.g., Ariño & de la Torre, 1998; Doz, 1996; Kumar & Nti, 1998; Ring & Van de Ven, 1994; Zajac & Olsen, 1993) has proposed complex frameworks on alliance processes that are difficult to model empirically in full due to chains of moderated relationships and feedback loops. Future empirical analyses of alliance dynamics with larger samples and more fine-grained information may be able to accommodate more of this complexity using structural models.

Second, our study is silent on the efficiency or performance implications of *ex post* governance changes in alliances. It remains for future research to examine if alliances subject to contractual renegotiations suffer efficiency or other penalties relative to alliances designed with better-aligned governance structures or with more extensive *ex post* deterrents. Given the relevance of alliance evolution and practical issues surrounding the relative importance of contractual completeness versus relationship flexibility as well as alliance design versus alliance management (e.g., Doz & Hamel, 1998), we believe there are opportunities for research on many different aspects of alliance dynamics that can contribute to the field's understanding of inter-firm collaboration.

References

Anderson, E. 1988. Strategic implications of Darwinian economics for selling efficiency and choice of integrated or independent sales forces. *Management Science*, 34: 599-618.

Anderson, E., & Weitz, B. 1992. The use of pledges to build and sustain commitments in distribution channels. *Journal of Marketing Research,* 29: 18-34.

Ariño, A., & de la Torre, J. 1998. Learning from failure: Towards an evolutionary model of collaborative ventures. *Organization Science,* 9: 306-325.

Armstrong, J. S., & Overton, T. S. 1977. Estimating nonresponse bias in mail surveys. *Journal of Marketing Research,* 14: 396-403.

Balakrishnan, S., & Koza, M. P. 1993. Information asymmetry, adverse selection, and joint ventures. *Journal of Economic Behavior and Organization,* 20: 99-117.

Barkema, H. G., Bell, J. H. J., & Pennings, J. M. 1996. Foreign entry, cultural barriers, and learning. *Strategic Management Journal,* 17: 151-166.

Barkema, H. G., Shenkar, O., Vermeulen, F., & Bell, J. H. J. 1997. Working abroad, working with others: How firms learn to operate international joint ventures. *Academy of Management Journal,* 40: 426-442.

Barkema, H. G., & Vermeulen, F. 1997. What differences in the cultural backgrounds of partners are detrimental for international joint ventures? *Journal of International Business Studies,* 28: 845-864.

Beamish, P. W. 1985. The characteristics of joint ventures in developed and developing countries. *Columbia Journal of World Business,* 20: 13-19.

Beamish, P. W., & Banks, J. C. 1987. Equity joint ventures and the theory of the multinational enterprise. *Journal of International Business Studies,* 18: 1-16.

Blodgett, L. L. 1992. Factors in the instability of international joint ventures: An event history analysis. *Strategic Management Journal,* 13: 475-491.

Borys, B., & Jemison, D. B. 1989. Hybrid arrangements as strategic alliances: Theoretical issues in organizational combinations. *Academy of Management Review,* 14: 234-249.

Buckley, P. J., & Casson, M. 1976. *The future of the multinational enterprise.* London, UK: Macmillan.

Caves, R. E. 1996. *Multinational enterprise and economic analysis* (Second Edition). New York, NY: Cambridge University Press.

Chi, T. 1994. Trading in strategic resources: Necessary conditions, transaction cost problems, and choice of exchange structure. *Strategic Management Journal,* 15: 271-290.

Dillman, D. 1978. *Mail and telephone surveys: The total design method.* New York: Wiley.

Doz, Y. L. 1996. The evolution of cooperation in strategic alliances: Initial conditions or learning processes? *Strategic Management Journal,* 17 (Summer Special Issue): 55-84.

Doz, Y. L., & Hamel, G. 1998. *Alliance advantage: The art of creating value through partnering.* Boston, MA: Harvard Business School Press.

Drazin, R., & Van De Ven, A. H. 1985. Alternative forms of fit in contingency theory. *Administrative Science Quarterly,* 30: 514-539.

Dunning, J. H. 1988. The eclectic paradigm of international production: A restatement and some possible extensions. *Journal of International Business Studies,* 19: 1-31.

Dyer, J. H., & Singh, H. 1998. The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review,* 23: 660-679.

Eisenhardt, K. M., & Schoonhoven, C. B. 1996. Resource-based view of strategic alliance formation: Strategic and social effects in entrepreneurial firms. *Organization Science,* 7: 136-150.

Franko, L. G. 1971. *Joint venture survival in multinational corporations.* New York, NY: Praeger Publishers.

Gatignon, H., & Anderson, E. 1988. The multinational corporation degree of control over subsidiaries: An empirical test of a transaction cost explanation. *Journal of Law, Economics, and Organization,* 4: 305-336.

Gomes-Casseres, B. 1989. Ownership structures of foreign subsidiaries: Theory and evidence. *Journal of Economic Behavior and Organization,* 11: 1-25.

Gomes-Casseres, B. 1990. Firm ownership preferences and host government restrictions: An integrated approach. *Journal of International Business Studies,* 21: 1-22.

Gulati, R. 1995. Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal,* 38: 85-112.

Gulati, R. 1998. Alliances and networks. *Strategic Management Journal,* 19: 293-317.

Hagedoorn, J. 1993. Understanding the rationale of strategic technology partnering: Interorganizational modes of cooperation and sectoral differences. *Strategic Management Journal,* 14: 371-385.

Hamel, G. 1991. Competition for competence and interpartner learning within international strategic alliances. *Strategic Management Journal,* 12: 83-103.

Harman, H. H. 1967. *Modern factor analysis.* Chicago, IL: University of Chicago Press.

Hennart, J.-F. 1988. A transaction cost theory of equity joint ventures. *Strategic Management Journal,* 9: 361-374.

Hennart, J.-F. 1993. Explaining the swollen middle: Why most transactions are a mix of "market" and "hierarchy." *Organization Science,* 4: 529-547.

Inkpen, A. C., & Beamish, P. W. 1997. Knowledge, bargaining power, and the instability of international joint ventures. *Academy of Management Review,* 22: 177-202.

Jones, C., Hesterly, W. S., Fladmoe-Lindquist, K., & Borgatti, S. 1998. Professional service constellations: How strategies and capabilities influence collaborative stability and change. *Organization Science,* 9: 396-410.

Khanna, T., Gulati, R., & Nohria, N. 1998. The dynamics of learning alliances: Competition, cooperation, and relative scope. *Strategic Management Journal,* 19: 193-210.

Killing, J. 1983. *Strategies for joint venture success.* New York: Praeger Publishers.

Klein, B., Crawford, R., & Alchian, A. 1978. Vertical integration: Appropriable rents and the competitive contracting process. *Journal of Law and Economics,* 21: 279-326.

Kogut, B. 1988. Joint ventures: Theoretical and empirical perspectives. *Strategic Management Journal,* 9: 319-332.

Kogut, B. 1989. The stability of joint ventures: Reciprocity and competitive rivalry. *Journal of Industrial Economics,* 38: 183-198.

Kogut, B. 1991. Joint ventures and the option to acquire and expand. *Management Science,* 37: 19-33.

Koza, M., & Lewin, A. 1998. The co-evolution of strategic alliances. *Organization Science,* 9: 255-264.

Kumar, R., & Nti, K. O. 1998. Differential learning and interaction in alliance dynamics: A process and outcome discrepancy model. *Organization Science,* 9: 356-367.

Larson, A. 1992. Network dyads in entrepreneurial settings: A study of the governance of exchange relationships. *Administrative Science Quarterly,* 37: 76-104.

Li, J. 1995. Foreign entry and survival: Effects of strategic choices on performance in international markets. *Strategic Management Journal,* 16: 333-351.

Macaulay, S. 1963. Non-contractual relations in business: A preliminary study. *American Sociological Review,* 28: 55-70.

Macneil, I. R. 1978. Contracts: Adjustments of long-term economic relations under classical, neoclassical, and relational contract law. *Northwestern University Law Review,* 72: 854-902.

Macneil, I. R. 1981. Economic analysis of contractual relations: Its shortfalls and the need for a "rich classificatory apparatus." *Northwestern University Law Review,* 75: 1018-1063.

Madhok, A., & Tallman, S. B. 1998. Resources, transactions, and rents: managing value through inter-firm collaborative relationships. *Organization Science,* 9: 326-339.

Mitchell, W., & Singh, K. 1992. Incumbents' use of pre-entry alliances before expansion into new technical subfields of an industry. *Journal of Economic Behavior and Organization,* 18: 347-372.

Nakamura, M., Shaver, M., & Yeung, B. 1996. An empirical investigation of joint venture dynamics: Evidence from U.S.-Japan joint ventures. *International Journal of Industrial Organization,* 14: 521-541.

Narasimhan, S. 1989. Relationship or boundary? Handling successive contracts. *California Management Review,* 77: 1077-1122.

Neter, J., Wasserman, W., & Kutner, M. H. 1985. *Applied linear statistical models* (Second Edition). Homewood, IL: Irwin.

Nunnally, J. C. 1978. *Psychometric theory.* (Second Edition). New York, NY: McGraw-Hill.

Osborn, R. N., & Baughn, C. C. 1990. Forms of interorganizational governance for multinational alliances. *Academy of Management Journal,* 33: 503-519.

Oxley, J. E., 1997. Appropriability hazards and governance in strategic alliances: A transaction cost approach. *Journal of Law, Economics, and Organization,* 13: 387-409.

Pan, Y. 1996. Influences on foreign equity ownership level in joint ventures in China. *Journal of International Business Studies,* 27: 1-26.

Park, S. H., & Russo, M. V. 1996. When competition eclipses cooperation: An event history analysis of joint venture failure. *Management Science,* 42: 875-890.

Park, S. H., & Ungson, G. R. 1997. The effect of national culture, organizational complementarity, and economic motivation on joint venture dissolution. *Academy of Management Journal,* 40: 279-307.

Parkhe, A. 1991. Interfirm diversity, organizational learning, and longevity in global strategic alliances. *Journal of International Business Studies,* 22: 579-601.

Parkhe, A. 1993. Strategic alliance structuring: A game theoretic and transaction costs examination of interfirm cooperation. *Academy of Management Journal,* 36: 794-829.

Parkhe, A. 1996. International joint ventures. In Punnett, B. J., & Shenkar, O. (Eds.), *Handbook for international management research:* 429-459. Cambridge, MA: Blackwell Publishers Inc.

Pennings, J. M., Barkema, H., & Douma, S. 1994. Organization learning and diversification. *Academy of Management Journal*, 37: 608-640.

Pisano, G. P. 1989. Using equity participation to support exchange: Evidence from the biotechnology industry. *Journal of Law, Economics, and Organization,* 5: 109-126.

Pisano, G. P. 1990. The R&D boundaries of the firm: An empirical analysis. *Administrative Science Quarterly,* 35: 153-176.

Practicing Law Institute. 1986. *Corporate partnering: Advantages for emerging and established companies.* New York: Practicing Law Institute.

Reynolds, J. I. 1979. *India-American joint ventures: Business policy relationships.* Washington, DC: University Press of America.

Ring, P. S., & Van de Ven, A. H. 1992. Structuring cooperative relationships between organizations. *Strategic Management Journal,* 13: 483-498.

Ring, P. S., & Van de Ven, A. H. 1994. Developmental processes of cooperative interorganizational relationships. *Academy of Management Review,* 19: 90-118.

Salancik, G. R., & Pfeffer, J. 1977. An examination of need-satisfaction models of job attitudes. *Administrative Science Quarterly,* 22: 427-456.

Shan, W. 1991. Environmental risks and joint venture sharing arrangements. *Journal of International Business Studies,* 22: 555-578.

Silverman, B. S., Nickerson, J. A., & Freeman, J. 1997. Profitability, transactional alignment, and organizational mortality in the U.S. trucking industry. *Strategic Management Journal,* 18 (Summer Special Issue): 31-52.

Stuckey, J. A. 1983. *Vertical integration and joint ventures in the aluminum industry.* Cambridge, MA: Harvard University Press.

Teece, D. J. 1986. Transaction cost economics and the multinational enterprise: An assessment. *Journal of Economic Behavior and Organization,* 7: 21-45.

Teece, D. J. 1992. Competition, cooperation, and innovation: Organizational arrangements for regimes of rapid technological progress. *Journal of Economic Behavior and Organization,* 18: 1-25.

Williamson, O. E. 1975. *Markets and hierarchies.* New York, NY: Free Press.

Williamson, O. E. 1979. Transaction-cost economics: The governance of contractual relations. *Journal of Law and Economics,* 22: 233-261.

Williamson, O. E. 1985. *The economic institutions of capitalism.* New York, NY: Free Press.

Williamson, O. E. 1991. Comparative economic organization: The analysis of discrete structural alternatives. *Administrative Science Quarterly,* 36: 269-296.

Williamson, O. E. 1994. Strategizing, economizing, and economic organization. In Rumelt, R. P., Schendel, D. E., & Teece, D. J. (Eds.), *Fundamental issues in strategy: A research agenda:* 361-401. Boston, MA: Harvard Business School Press.

Yang, A., & Zeng, M. 1999. International joint venture instability: A critique of previous research, a reconceptualization, and directions for future research. *Journal of International Business Studies,* 30: 397-414.

Zajac, E. J., & Olsen, C. 1993. From transaction cost to transaction value analysis: Implications for the study of interorganizational strategies. *Journal of Management Studies,* 30: 131-145.

Zucker, L. G. 1986. Production of trust: Institutional sources of economic structure 1840-1920. In Staw, B. W., & Cummings, L. L. (Eds), *Research in Organizational Behavior,* 8: 53-111. Greenwich, CT: JAI Press.