THE DESIGN OF EQUITY OWNERSHIP STRUCTURE IN INTER-FIRM RELATIONSHIPS

DO MANAGERS CHOOSE ACCORDING TO THEORY?

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Abstract: Theories explaining the equity ownership structure of inter-firm relationships, such as the resource-based view or transaction cost economics, commonly assume a significant role for managerial choice, but this assumption is rarely assessed for its realism. In this study, we use the policy capture methodology to directly assess whether managers choose according to theory (and which theory). In a sample of 66 experienced managers, we find that managerial choices of equity ownership are indeed influenced both by competitive advantage and transaction hazards, though to a greater extent by competitive advantage. Further, only competitive advantage influences managers' choices about the extent of equity ownership in their partner; transaction hazards motivate the choice of some equity over none. We discuss implications for how inter-firm relationships are and ought to be designed.

Keywords: Equity structure; inter-firm relations; inter-organizational design

In this study, we investigate how managers choose a key design feature of the structure of inter-firm relationships – the extent to which one party has equity ownership in another. This is a fundamental design variable in inter-firm relationships that determines the extent to which one party has the authority to build organizational linkages to, or even modify the internal organization of, the other party (Gulati, Lawrence, & Puranam, 2005; Kale & Puranam, 2004). For example, in the relationship between two firms A and B, if A acquires B, this gives Firm A a large set of design and decision rights. A minority equity stake held by A may give it board membership and observation rights to B's inner workings. No equity stake leaves partners to their abilities to work collaboratively within a purely contractual framework.

The various theories that have been used to understand the factors that impact ownership choices in inter-firm relationships can be broadly classified into those that focus on resource attributes and those that focus on exchange attributes (Poppo & Zenger, 1998; Schilling & Steensma, 2002). These theories include the resource-based view (RBV), transaction cost economics (TCE), real options, knowledge-based view, and property rights. While each theory emphasizes an important determinant of the equity arrangement, we focus on the RBV (Penrose, 1959; Wernerfelt, 1994) and TCE (Williamson, 1985) theories for three reasons. First, these two theories appear to dominate thinking regarding firms' equity ownership choices in inter-firm relationships (Hagedoorn & Duysters, 2002; Madhok, 1996; Sampson, 2005; Schilling & Steensma, 2002; Steensma & Corley, 2000, 2001). Second, the two theories also emphasize somewhat different aspects in explaining equity ownership choices: TCE mainly focuses on the anticipation and control of partner opportunism in exchange relationships (Williamson, 1985) whereas the RBV emphasizes the benefits of undisputed access to resources that provide a basis for competitive advantage (Conner & Prahalad, 1996;

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Madhok & Tallman, 1998). Third, by restricting ourselves to these two theories, we maintain some parsimony in examining the relative and interdependent impact of the criteria identified by these theories on equity ownership choices.

Despite the extensive empirical literature that has developed around equity in inter-firm relationships, we know little about whether managers make this design decision as the RBV and TCE theories would predict. In order to observe how managers choose equity ownership levels in inter-firm relationships, we use a field-experimental technique known as "policy capture" (Aiman-Smith, Scullen, & Barr, 2002; Karren & Barringer, 2002; Pablo, 1994; Tyler & Steensma, 1995) to determine whether theoretical criteria representing RBV and TCE influence managers' equity ownership decisions in inter-firm relationships.

THE (UNTESTED) ROLE OF MANAGERIAL CHOICE IN RBV AND TCE THEORIES

The assumption that managers select an appropriate form of economic organization in order to optimize the net benefits of ownership is common to both resource-based and transaction cost theorizing. For instance, note the assumption of far-sighted contracting in response to hold-up concerns in transaction cost economics (Williamson, 1991a) and the quest for sustainable advantage in response to resource attributes in resource-based theories (Conner & Prahalad, 1996). As Schilling and Steensma (2002: 399) point out, both these perspectives on ownership and firm boundaries "... are based on the premise that these decisions are made (by managers) in attempts to optimize their firm's performance." Yet the nature of most studies of governance choice and performance does not allow a test of the premise that managers are indeed taking into account the criteria of TCE and RBV theories in making their governance choices.

There are at least two reasons why managerial choice criteria are still unclear in decisions about equity ownership (Kale & Puranam, 2006). First, the need for relationship-specific investments in inter-firm relationships can signal to managers not only the hazards of hold-up (as proposed by TCE) but also an opportunity to create a unique source of competitive advantage through partnership (Dyer & Singh, 1998; Zajac & Olsen, 1993) or through close coordination between partners (Monteverde, 1995), both of which are non-TCE-based reasons for seeking equity ownership. In principle, we can account for such alternative theoretical explanations by simultaneously including different variables that represent them in the empirical analysis, as some studies have tried to do (Gulati & Singh, 1998; Poppo & Zenger, 1998; Schilling & Steensma, 2002), but there are challenges in this regard. Scholars find it difficult to obtain extensive field data on these alternative drivers of governance choices, and even when such data are available they do not produce sufficiently orthogonal measures of competing constructs (Cook & Campbell, 1979). Hence, observing a positive relationship between exchange-specific assets and ownership is not sufficient to decide which of these interpretations (TCE or RBV) characterizes managers' decision making regarding ownership in studies that do not (or cannot) adequately control for such alternative explanations.

Second, there is another set of empirical tests of transaction cost economics that find a positive relationship between the "appropriate" ownership choice (from a transaction cost minimization perspective) and performance. However, as Williamson (1985) himself notes, managers might choose a particular ownership structure based on a variety of reasons unconnected with the theory, yet only those ownership decisions that are "appropriate" given the level of relationship-specific investments required will perform well (and hence be observed). Thus, even if managers make governance choices in their exchange relationships which are completely blind to the possibility of opportunism, such relationships will perform poorly relative to competition and may not survive, leading to an observed positive relationship between opportunism concern and ownership (Williamson, 1985). More generally, it is well known that for any efficiency-based theory of ownership, managers need not act in consonance with the relevant theory (or even be aware of it) for it to be valid as a theory of optimal decision making (Milgrom & Roberts, 1992). Empirical evidence of a positive association between the prescribed choice and performance certainly suggests that the theory describes optimal behavior in a strong competitive selection environment.

But based on that evidence, we cannot infer that managers taking those higher performing decisions were actually aware of, or acting in conformance with, the theory.

For these reasons, extant studies that link exchange or resource characteristics to observed ownership structures in inter-firm relationships (whether conducted using primary or secondary data) shed limited light on what factors managers actually take into account while making their ownership choice. Hence, in this study we use the policy capture technique which has been effectively used by previous management scholars to study how hypothesized theoretical factors feature in managerial decision making in situations such as evaluating acquisition candidates (Hitt & Tyler, 1991), assessing alliance opportunities (Tyler & Steensma, 1995), and managing post-acquisition integration (Pablo, 1994).

The policy capture methodology offers advantages over extant field studies based on archival or survey data: (a) in this technique we can simultaneously include criteria that represent each of the different theoretical factors that potentially influence equity ownership choices in inter-firm relationships, (b) we can experimentally manipulate the criteria representing these alternative explanations by making them as orthogonal as possible; and (c) we can then observe whether these criteria/factors have an influence on managers' ownership choices (rather than rely on observing the ownership structures or choices ex-post, which could have resulted from competitive selection forces).

THEORY AND HYPOTHESES

In this section, we present hypotheses to describe how managers might make decisions about equity ownership choices if they were to behave according to the assumptions of the RBV and TCE theories, respectively. Our goal here is not to offer new theoretical insights into how resource or exchange factors *ought* to influence managers' decisions but rather to provide the theoretical rationale underlying each hypothesis and then test it to determine whether managerial decision making does conform to existing theory.

Resource-Based View and Equity Ownership

According to the resource-based view, a firm enjoys competitive advantage over its rivals if it possesses resources that are *valuable* (i.e., they enable a firm to improve its efficiency or effectiveness), generate *unique* value in conjunction with other existing resources (i.e., they generate value in excess of their shadow prices), and are *difficult for other firms to imitate* (Barney, 1991). While the concept of competitive advantage was initially used to explain inter-firm profitability differences, scholars have since extended it to explain ownership and firm boundaries as well (Conner, 1991; Conner & Prahalad, 1996). A key assumption in such arguments is that the generation of competitive advantage is a primary motivation for choosing ownership in inter-firm relationships (Schilling & Steensma, 2002; Steensma & Corley, 2000, 2001; Steensma & Fairbank, 1999).

By obtaining ownership of an exchange partner that provides valuable resources, a firm gains the rights of use to those resources. Ownership also enables a firm to plausibly exclude rivals from gaining easy access to that resource, as well as gives the firm decision rights over future development of that resource in ways that might make it difficult for rivals to imitate. Ownership also gives a firm greater authority to manage those resources through administrative oversight (Gulati & Singh, 1998; Sampson, 2007). This enables better sharing and coordination of resources and know-how (Gulati, Lawrence, & Puranam, 2005) as well as the generation of unique value by exploiting synergies or interdependencies that might exist between them (Conner & Prahalad, 1996). Hence, RBV-based reasoning suggests that the importance of ownership is greater when the resources in question are valuable in terms of enhancing the focal firm's competitive position in the various ways described above. Thus, if the assumptions about managerial choice embodied in the resource-based view of economic organization are realistic and managers make decisions according to the logic of the RBV perspective, then we would expect that:

Hypothesis 1. Decision makers are more likely to seek equity ownership in their partner when the partner firm's resources can enhance the competitive position of their own

firm.

Transaction Cost Economics and Equity Ownership

TCE theorists assume that opportunism coupled with limited rationality (and therefore contractual incompleteness) is the primary source of transaction hazards in inter-firm relationships. These hazards are particularly salient when exchange partners need to invest in relationship-specific assets to derive expected benefits from the exchange, and when there is high uncertainty about future demand conditions surrounding the exchange (Williamson, 1985, 1991a). Investment in relationship-specific assets refers to "creation of assets by a firm that are specialized in conjunction with the assets of its partner" (Dyer & Singh, 1998), and it includes several types of asset specificity such as site specificity, physical asset specificity, or human asset specificity (Williamson, 1985). These investments are specialized to the particular relationship and have little or no value outside it. If one of the parties has to invest in such assets, the other party might "hold-up" the partner and force a contract renegotiation along terms favorable to itself. Similarly, TCE also predicts that uncertainty about market conditions suggests the need for future adaptation between partners, which is likely to be costly due to opportunistic bargaining (Williamson, 1985).

Williamson (1985), building on Coase (1998), suggests that exchanges with high transaction hazards are better organized within a firm than across firms because hierarchy enables firms to alleviate or control the transaction hazards or costs linked to some of the factors mentioned above. A stream of literature has built on this basic idea to explain when or why firms might seek ownership in their exchange partners. Ownership in or of the partner provides a firm the necessary hierarchical control to monitor opportunistic behavior and mitigate transactional hazards that might arise (Gulati & Singh, 1998). This is not only true for full ownership but also partial ownership in the partner firm – this is because even with partial ownership a firm is able to secure hierarchical oversight in terms of securing positions on the Board of Directors and/or voting rights commensurate with its proportion of ownership. Equity ownership also alleviates the hazards of opportunistic behavior by aligning incentives through the creation of mutual hostages (Ahmadjian & Oxley, 2006; Kogut, 1988; Williamson, 1985). Adaptation between exchange partners, which might become necessary in the face of future demand uncertainty, is also more easily managed through ownership than in pure arm's-length contractual exchange (Williamson, 1991b). This is because hierarchy facilitates superior cooperation (that might be required for better adaptation) through monitoring, sanctions, or collaborative incentives (Williamson, 1991b). If the assumption of managerial choice embodied in the TCE perspective on economic organization is realistic and managers make decisions according to the logic of the TCE perspective, then we would expect that:

> *Hypothesis* 2a: Decision makers are more likely to seek equity ownership in their partner when there is a need for relationship-specific investments to benefit from exchange with the partner firm.

> *Hypothesis* 2b: Decision makers are more likely to seek equity ownership in their partner when there is uncertainty about demand conditions relevant to the exchange relationship.

In addition to emphasizing the direct impact of relationship-specific investments and demand uncertainty on firms' decisions to secure ownership, some TCE scholars have also tested the hypothesis that the effect of demand uncertainty on ownership is contingent upon the level of asset specificity involved – namely, if asset specificity is low, lower levels of ownership are preferred, whatever the degree of uncertainty. Therefore, we also test the implications of this formulation in our empirical analyses.

METHOD

The setting of our study focuses on decisions regarding equity ownership in inter-firm technology sourcing relationships. These are a firm's relationships meant to source

technological know-how as embodied in its partner's products, services, or capabilities (Steensma & Corley, 2000, 2001). Sourcing relationships could range from pure contractual relationships (i.e., they do not involve any equity ownership) to acquisitions, and they include relationships with various intermediate levels of equity ownership. Beyond their widespread occurrence, technology sourcing relationships are also a useful empirical setting for a theoretical reason. Scholars have traditionally studied the costs and benefits of ownership vis-à-vis contracts to support exchange by analyzing firms' internal production vs. external procurement decision (make-or-buy). However, inferences about the exchange efficacy of ownership vs. contracts drawn from the make-or-buy decision can be potentially confounded by differences in internal and external production capabilities (Jacobides & Winter, 2005). Put simply, firms may decide to "make" instead of "buy" not because of contractual hazards associated with buying but because they are more capable of making than any potential supplier (Kogut & Zander, 1992). Explicitly accounting for capability differences is one approach to isolating the relative strengths of ownership and contracts for supporting exchange. But an alternative is to focus on conditions under which firms seek ownership instead of relying only on contracts to support procurement of an input/resource they cannot make. Technology sourcing relationships provide such an alternative because in such settings firms have already made the choice of "buying" (i.e., sourcing technology from an external player) over "making" (i.e., developing the technology internally). Firms then need to decide whether they should use equity or contracts to govern the relationship with a partner from whom they are "buying." Thus, our analysis of the choice of ownership in technology sourcing relationships complements the work of Tyler and Steensma (1995) who have used the policy capture approach to analyze the choice between internal and external technological development.

Sample

We used the policy capture technique to collect our data. Details concerning the construction of the policy capture instrument can be found in the Appendix. In selecting our sample, we tried to strike a balance between validity, convenience, and generalizability. First, we decided to collect respondent data from firms that were in industries where technology-sourcing relationships are an important part of firms' strategies. Such industries include automotive, chemicals, pharmaceuticals, computer hardware and software, communications, engineering, and defense. Second, we administered the instrument to managers who were directly responsible for their companies' strategic partnerships. This enabled us to enhance the external validity of our study by matching respondents' experience and familiarity with the experimental task to that of a group of managers to which the study's results will be generalized (Aiman-Smith et al., 2002). Since it would be difficult to identify such managers from external, archival sources, we created the sampling frame from industry practitioners who had enrolled in an executive education program on alliances and acquisitions at a major U.S. business school. The respondents in our sample were able to give significant time and attention to completing the instrument as they were required to submit it as part of the pre-program preparation (collecting the data before the program also ensured that their responses to the instrument were not in any way biased by what they learned in the program).

Table 1. Number of Respondents by Position and Function

	Alliance Management	Business Development	Strategy and Planning	Corporate Development	Other	Total
President, CEO	0	0	0	0	3	3
Vice President	6	3	3	1	1	14
Director	22	13	4	1	1	41
Manager or Senior Manager	2	1	4	0	1	8
Total	30	17	11	2	6	66

We sent 120 questionnaires to the program participants and received complete responses

from 66 (a response rate of 55 percent). Table 1 summarizes the respondents' functions and positions. The average revenue of their firms was $7.2 billion in the year 2001. Respondents' average tenure in their company was 11.67 years, ranging from five to 20 years. There was no significant difference in annual sales or industry type between the companies of respondents and non-respondents. While this sampling frame provides us some convenience in collecting the data, the fact that the respondents come from different industries where inter-firm relationships are important, and represent various functions and levels of seniority within their companies, reduces some concerns about the lack of generalizability of our findings.

Dependent Variable: Equity Ownership

The dependent variable is a categorical measure representing four different levels of equity ownership that the respondent chose from in each of thirty scenarios. The variable is coded such that "0 = contractual relationship with zero equity ownership," "1= minority equity ownership" (<= 25 percent equity stake), "2 = non-majority equity ownership" (<= 50 percent equity stake), and "3 = majority equity ownership/acquisition" (> 50 percent equity).

Independent Variables

To capture the extent to which a partner firm's resources were perceived to be valuable in generating competitive advantage for the focal firm, we used the item "Extent to which the technological resource is significant to our business and competitive position." Our fieldwork suggested that managers intuitively view the potential of resources to generate competitive advantage in terms of their significance to the business. Tyler and Steensma (1995) also used a similarly worded item in their study. To measure the TCE factor of asset specificity, we used the item "Extent of investments required by both parties to fully benefit from the partnership (e.g., investments in R&D, production, marketing) that are specific to the technology being accessed from the partner and cannot be used for other purposes" (Poppo & Zenger, 1998). Finally, we used the item "Extent to which we understand and can assess the market potential for the technology being accessed" to convey perceived uncertainty about the demand for goods and services generated by the partner's technological resources (Schilling & Steensma, 2002; Steensma & Corley, 2001). Since low values indicated uncertainty, we reverse-coded this item in the analysis.

Control Variables

Since experimental manipulation is part of the policy capture technique (i.e., information on various independent variables is randomly assigned), in principle there should be no unobserved variables that systematically correlate with the independent and dependent variables and hence lead to spurious relationships between them. It is possible, however, that despite our best efforts the wording of our items may convey meaning other than what we intended. Hence, to minimize chances that the information we provide through our independent variables is confounded with a closely related construct, we explicitly included items in the instrument to reflect other such constructs: technological uncertainty, coordination costs, value of the resource to rivals, and costs of restructuring.

The real options perspective suggests that when there is significant uncertainty about the value of a partner's resources, then taking equity ownership in the partner may prematurely increase the opportunity cost of commitment for the focal firm (Folta, 1998). In order to distinguish it from demand uncertainty, we included information on technological uncertainty via the item "Extent to which we understand, and can assess, the relative benefits and viability of the technology being accessed." As with demand uncertainty, we reverse-coded this item. Some scholars argue that ownership is a means to control not only transaction costs linked to opportunism but also the costs of coordinating interdependent activities between partners (Ghoshal & Moran, 1996; Kogut & Zander, 1992). Efforts to facilitate inter-firm coordination produce coordination costs (Gulati & Singh, 1998; Thompson, 1967). To distinguish the effects of coordination costs from transaction costs, we provided information on coordination costs arising from interdependence between partners. We did this through the item "Extent of resources we need to commit to manage the coordination and interaction between our

company and the technology-providing company to exploit or leverage the technology being accessed" (Gulati & Singh, 1998). It has been suggested that anticipated restructuring costs inhibit complete equity ownership (i.e., acquisition) and create a preference for alliances or joint ventures with potential partners. Hence we controlled for restructuring costs that may arise after complete acquisition by using the item "Extent of restructuring required to divest unwanted resources and capabilities from the partner in case of acquisition" (Hennart & Reddy, 2000). We used a fourth item, "Extent to which our competitors are likely to gain benefit from or be interested in this technology," to provide information on the value of the partner firm's resources to rivals. The value that rivals ascribe to the technology being sought may enhance its perceived value in the minds of decision makers. Finally, since industry membership and respondents' experience and tenure within their organizations have had strong effects in prior policy capture exercises (e.g., Tyler & Steensma, 1995), we controlled for these variables in our study.

RESULTS

We checked the reliability and consistency of the responses following the approach recommended by prior policy capture studies (Hitt & Middlemist, 1979; Tyler & Steensma, 1995). We estimated an OLS regression model for each respondent based on his or her response to the 30 scenarios. In previous research, managers who failed to generate a model explaining at least 40 percent of the variation in their decision making ($R^2 < 0.40$) were viewed as giving inconsistent managerial ratings, and their observations were dropped from the estimation sample (Tyler & Steensma, 1995). In our study, we did not drop any observations since all respondents met this criterion, exhibiting satisfactory consistency and reliability. Table 2 shows the correlations and descriptive statistics for all variables. None of the independent variables correlated significantly with each other ($p < 0.01$), which was expected given random assignment of values to them. Most explanatory variables were significantly correlated with equity ownership choice in the full sample. Since the dependent variable has multiple categories to reflect various levels of equity ownership, we used a multinomial logistic regression model to test the hypotheses. Since the observations might be correlated within respondents, we adjusted the standard errors for non-independence (Wooldridge, 2003).

Table 2. Correlation Matrix and Descriptive Statistics

		1	2	3	4	5	6	7	Mean	S.D.
1	Equity Ownership Level	1.00							2.35	0.44
2	Coordination Costs	0.32*	1.00						2.73	1.41
3	Demand Uncertainty (Reverse scaled)	-0.13*	0.017	1.00					2.7	1.37
4	Relationship-Specific Investments	0.04	0.19	0.17	1.00				2.53	1.28
5	Technological Uncertainty (Reverse scaled)	-0.37*	0.39*	-0.02	-0.09	1.00			2.57	1.23
6	Significance to Competitive Position	0.48*	0.23	-0.07	-0.15	0.040	1.00		2.9	1.27
7	Value of Resource to Rivals	0.34*	0.12	-0.23	-0.09	0.05	0.33*	1.00	2.7	1.53
8	Restructuring Costs	-0.02	0.17	0.07	0.04	0.23	-0.11	-0.15	3.4	1.52

*Significant in the full sample at $p < 0.01$

Results for the Independent and Dependent Variables

Table 3 provides the results of our analysis. The baseline category is "non-equity relationship," and each column presents the effect of the variables on the odds of choosing higher equity structures relative to the baseline category. The overall model is significant (LR $\chi^2 = 1089.89$ dF=40, $p<0.01$). Further, the coefficients for significance of a resource to competitive position

(χ^2 = 76.50, p<0.01, dF=3), relationship-specific investments (χ^2 = 13.36, p<0.05, dF=3), and demand uncertainty (χ^2 = 58.26, p<0.01, dF=3) are each significantly different from zero across the model. The results indicate that the value of the technological resource in terms of enhancing the focal firm's competitive position significantly influences managers to choose equity ownership over non-equity ownership in their partners, thus supporting Hypothesis 1. The results for the TCE factors, however, are mixed. The effect of relationship-specific investments on ownership is as expected, supporting Hypothesis 2a. In contrast, although uncertainty about demand conditions features significantly in decision makers' models, its impact is opposite to that predicted by theory: the greater the market uncertainty, the less likely decision makers will seek ownership in their exchange partner, which is contrary to Hypothesis 2b. To assess the relative explanatory power of these factors, we also estimated the model LR χ^2 and pseudo-R^2 for different specifications that included each relevant theoretical factor one at a time (see Table 4). The addition of the variable "significance to competitive position" to the model generates the largest increase in model LR χ^2 and pseudo-R^2 indicating that it has more explanatory power in explaining managers' choice of equity ownership than the TCE factors.

Table 3. Choice Between Non-equity Partnerships and Different Levels of Equity Ownership in Partner Firm (Multinomial Logistic Regression)

	Minority Equity vs. Non-equity	**Non-majority Equity vs. Non-equity**	**Majority Equity vs. Non-equity**
Significance to Competitive Position	0.52***	0.85***	1.08***
	0.08	0.10	0.13
Demand Uncertainty	-0.24***	-0.36***	-0.59***
	0.06	0.08	0.08
Relationship-Specific Investments	0.14*	0.30***	0.26**
	0.08	0.09	0.11
Technical Uncertainty	-0.10	-0.32***	-0.70***
	0.06	0.08	0.09
Restructuring Costs	-0.05	-0.14**	0.18**
	0.05	0.06	0.07
Value of Resource to Rivals	0.30***	0.63***	0.75***
	0.05	0.07	0.09
Anticipated Coordination Costs	0.12*	0.31***	0.29***
	0.06	0.06	0.07
Tenure in Company	0.03	0.10***	0.14***
	0.02	0.03	0.04
Industry	Included ***	Included ***	Included ***
DF	40	40	40
N	1980	1980	1980
LR Chi-square	1089.89 ***	1089.89 ***	1089.89 ***

Arguments about the determinants of ownership often implicitly assume that increasing degrees of resource value or transactional hazards proportionately lead to increasing levels of equity ownership, that is, there is a strictly monotonic relationship between the antecedents of ownership and levels of ownership (Gulati & Singh, 1998; Hagedoorn & Duysters, 2002; Steensma & Corley, 2000). Therefore, we conducted additional analyses to assess whether the impact of RBV and TCE factors on equity ownership choice was strictly monotonic. We assessed whether the coefficients for the RBV and TCE factors in Table 3 are significantly different, and increasing, across models for increasing ownership levels. We found this was true for the "significance of resource to competitive position" and "demand uncertainty" variables (χ^2 = 23.08 and 11.38, p < 0.01, dF=1 for resource significance, and χ^2 = 4.76 and 16.03, p < 0.05 and p < 0.01, dF=1 for market uncertainty). But coefficients for relationship-

specific investments were statistically identical for non-majority and majority ownership. This suggests that the effect of this criterion is not strictly monotonic – higher levels of the "need for relationship-specific investment" do not encourage managers to seek higher levels of equity ownership.

Table 4. Improvements in Model Fit and Explanatory Power

	Models with Control Variables Only	**Models with Control Variables and..**	**Models with Control Variables and..**	**Models with Control Variables and..**	**Models with Control Variables and..**
Significance to Competitive Position		Included			
Relationship-Specific Investments				Included	Included
Demand Uncertainty			Included		Included
LR Chi-square	794.42	991.47	863.99	810.98	872.58
DF	33	36	36	36	39
(Pseudo) R^2	0.15	0.18	0.16	0.15	0.16

We also tested the alternate specification wherein the impact of demand uncertainty on ownership is moderated by relationship-specific investments, as suggested by some TCE scholars. The coefficient of the interaction term as well as the interaction effect (Ai & Norton, 2003) were not different from zero. This indicates no evidence of an interaction effect, suggesting that at least from a managerial choice standpoint, demand uncertainty has a main effect on ownership choices rather than its effect being conditional on the level of relationship-specific investments as suggested by TCE theory.

Results for the Control Variables

We found that higher technical uncertainty lowered the likelihood of seeking ownership while higher coordination costs enhanced it. These results are consistent with prior research that emphasizes the real options perspective (Folta, 1998) or the coordination or knowledge perspective (Gulati & Singh, 1998) on ownership, respectively. We also found that industry effects were significant, suggesting that ownership choices in inter-firm relationships vary systematically across industries. To explore this further, we estimated the main effects model for each industry separately and compared effects across models for different industries. "Significance of the resource to competitive position" had robust and consistent effects on ownership for respondents from all industries. However, the effect of relationship-specific investment on ownership varied in terms of its importance across different industries. Respondents from the pharmaceutical industry (270 observations from nine respondents) and the engineering industry (510 observations from 17 respondents) placed greater importance on this factor than those from other industries. In various industry-specific models, demand uncertainty again impacted ownership opposite to that predicted by TCE theory, but these effects were relatively weak for respondents from the chemical (120 observations from four respondents) and engineering industry (510 observations from 17 respondents). Overall, while significance of resource to competitive position influences ownership decisions similarly across industries, there is inter-industry variation in the impact of transactional hazards on ownership decisions.

We also observed that respondents with greater experience are more likely to choose higher levels of ownership in their partner than those with lesser experience, all other factors being equal. This might be indicative of either greater responsibility assigned to them or greater confidence on their part about using equity ownership to organize inter-firm relationships. We also estimated our models including interaction terms between respondents' experience and the main RBV and TCE factors, and we found that the interaction term between experience and significance of resource to competitive position (an RBV factor) was significant, while those between experience and demand uncertainty and relationship-specific investments (the two TCE factors) were not. Further, the lack of any interaction between experience and the

TCE factors implies that, in our study, more experience does not reflect greater risk aversion or greater emphasis on transactional hazards.

DISCUSSION AND IMPLICATIONS

Our results support three main conclusions: (1) managerial choice is a significant factor in both RBV and TCE theory as regards equity ownership structure; (2) choice plays a more important role in theories of resource value than in theories of transactional hazard; and (3) choice may be invoked to explain *degrees* of ownership in theories drawing on resource value but not in theories emphasizing transaction hazards. We discuss the implications of our study for both research and practice by comparing our findings with those from other studies that have investigated the same (or similar variables) as antecedents of equity ownership in technology-sourcing relationships.

First, RBV proposes that equity ownership in inter-firm relationships is motivated by competitive advantage considerations, and previous field studies have observed either positive effects (Steensma & Corley, 2001) or no effects (Schilling & Steensma, 2002) for competitive advantage. In our study, we see that managerial choices of equity ownership are strongly influenced by the significance of the partner's resources to the focal firm's competitive position as well as by their value to rivals. Our results may be stronger because (a) we have been able to isolate the influence of resource attributes on managerial choices more precisely (through orthogonal manipulation) than might be possible in field studies and (b) we observe managerial choices directly. We thus conclude, in contrast to Schilling and Steensma (2002), that resource attributes not only influence managerial choices of partner firms (i.e., which firm to partner with) but also the ownership structure of such relationships.

Second, as predicted by TCE, we find that the need for relationship-specific investments increases the likelihood of managers choosing greater levels of equity ownership. This is consistent not only with the results of earlier studies which examined the threat of opportunism as an antecedent of ownership in inter-firm relationships but also with the voluminous TCE literature on vertical integration and firm boundaries (David & Han, 2004). In addition, however, our study suggests that TCE theorists need not rely on selection forces alone to justify their arguments about the effects of asset specificity on ownership choices; they can invoke managerial choice as well. Further, our results suggest that analyses of the effect of exchange attributes (e.g., transactional hazards due to relationship-specific investments) on the ownership structure of inter-firm relationships must account for resource attributes (e.g., resource significance) as well. Thus, both factors influence managerial choices of equity ownership.

Third, contrary to TCE predictions, we observe that demand uncertainty lowers managers' likelihood of seeking ownership in their partners, a result that is consistent with some prior empirical research (Schilling & Steensma, 2002; Sutcliffe & Zaheer, 1998). Our respondents did not seem to distinguish between the effects of market and technical uncertainty since both factors influenced them to seek lower levels of ownership, which is contrary to the predictions of TCE theory.

Fourth, we find that while both RBV and TCE attributes influence managerial choices of equity ownership in inter-firm relationships, in our sample the resource aspect has greater explanatory power than the transaction cost aspect. It appears that equity ownership choices in inter-firm relationships are motivated more by the achievement of competitive advantage due to valuable resources and less by the achievement of exchange efficiency through elimination of transaction hazards. We also find that unlike resource attributes, the effect of exchange attributes varies significantly across industries.

The above four points suggest that resource-based considerations have a greater impact than transaction cost considerations on managerial choice of equity ownership in inter-firm relationships. More importantly, some of the core factors in TCE theory, such as demand uncertainty, affect ownership choices in a direction opposite to that predicted by theory – that is, uncertainty appears to enhance managerial concerns and desires for flexibility rather than adaptive capacity (Williamson, 1991b). Thus, if managerial choice is to remain an important variable in TCE theory, scholars will need to reconsider the effects of demand uncertainty

on equity ownership. Alternately, TCE theory would need to include selection forces as the primary mechanism by which demand uncertainty leads to greater ownership. In that case, future theoretical and empirical work should include selection forces as a moderating variable in examining the relevance of this factor to ownership structure. Overall, our study findings call for the refinement of TCE theory in explaining the ownership structure of inter-firm relationships.

Our study's implications for practice are straightforward: Managers can improve their decision-making quality about equity ownership levels in inter-firm relationships by becoming aware of criteria that they may not currently feature in their decision calculus, or may feature only implicitly. For instance, we see that managerial choices seem to be systematically less influenced by transaction hazards and more by the attainment of competitive advantage. Since existing evidence shows that equity ownership choices that are responsive to transaction hazards enhance exchange performance (e.g., Poppo & Zenger, 1998), it follows that managers could improve the performance of their partnerships by taking such hazards into consideration when selecting equity ownership levels.

Limitations of the Study

Our study is based on the policy capture procedure which uses created scenarios and experimentally controls the number and wording of the decision criteria provided to managers. The scenarios are somewhat contrived, and the stakes are low for the respondents. Being an experimental technique, like all such methods it is open to questions about its face validity. But we believe that insights generated by this method in terms of assessing the validity of assumptions about managerial choice largely offset such concerns. We also note that while policy capture helps in understanding which theoretical criteria feature prominently in a manager's decision calculus about equity ownership, we still cannot assert that this calculus is identical to that proposed by theory. To do so, one would require qualitative data such as verbal protocols or extensive field interviews (Buckley & Chapman, 1997). Policy capture provides the advantages of statistical inference and greater objectivity but at the expense of richness. It enables a robust test of the first level of descriptive realism, that is, whether or not decision makers utilize theoretical criteria in their decision making.

We examined four categories of equity ownership (non-equity, minority equity, non-majority equity, and majority equity) with boundaries between categories at 25 percent intervals. In reality, the boundaries between these categories are often an artifact of legal and accounting norms, as may be the extent to which control and ownership costs increase with levels of equity. So to the extent that such norms vary across countries, one needs to consider our results with caution. In particular, in the interests of simplicity, we omitted 50-50 joint ventures since they have unique features associated with a finely balanced power distribution (Hennart, 1993; Parkhe, 1993). In the interests of parsimony, we considered just two salient theories, resource value (RBV) and transaction hazards (TCE), and even here we did not test all possible arguments. For example, we did not include transaction frequency, moral hazard, adverse selection, or the knowledge characteristics of technology nor did we parse relationship-specific investments into finer categories such as site and temporal asset specificity (Williamson, 1985). Future research into the impact of these factors on managerial choices of equity ownership clearly would be useful. Also, as noted earlier, theories other than RBV or TCE (such as real options, knowledge-based or coordination view of the firm, and property rights theory) have been used to explain ownership in inter-firm relationships. While we account and control for some of them (e.g., the real options and coordination perspective) in our study, failure to account for others means that our results need to be interpreted with caution, and future research would benefit by investigating and controlling for the direct or indirect effects of those other theoretical variables.

It is possible that our results apply more accurately to technology sourcing settings since the fast-paced nature of technological progress and competition might make competitive advantage inherently more salient in the minds of respondents than transaction hazard considerations. However, prior research has found effects for transaction hazards in this setting, and technology sourcing relationships have indeed been an important empirical

context for transaction cost theorists (e.g., Sampson, 2005). But we acknowledge that it would be useful to replicate this study in a more "placid" setting, where competitive advantage considerations are more closely balanced with transaction hazard issues. Also, in our study we assumed (as per RBV and TCE theories) that equity ownership is important to the focal firm, primarily because it has governance implications in terms of control. But in some settings ownership may have other drivers and governance implications that were not addressed here. For example, in China and India equity ownership choices are often driven by the need to meet governmental rules and norms, and hence may have less governance/control implications (Kale & Puranam, 2004). Finally, we note that the conclusions drawn in our study about the relative explanatory power of the RBV and TCE theories depend on the validity of variable measurement. In particular, the estimated effects of relationship-specific investment may understate the true effects because our measure implied the need for investment by both partners – which may have created mutual hostages and obviated the need for ownership. However, the fact that the effect of this variable seems to vary systematically by industry offers some confidence that the factor is not too conservative in suggesting the possibility of hold-up. Further, we did find significant effects for both resource-based and transaction-based considerations, though the explanatory power for the single resource-based factor was larger than both transaction attributes combined (see Table 4).

CONCLUSION

We used the policy capture methodology to directly assess whether managers make ownership choices in inter-firm relationships according to theory. This is important to assess because while theories explaining the equity ownership structure in inter-firm relationships, such as the resource-based view or transaction cost economics, commonly assume a significant role for managerial choice, these assumptions are seldom assessed for their realism. Our study shows that managerial choices of equity ownership are indeed influenced both by competitive advantage and transaction hazards, though to a greater extent by the former. Further, only competitive advantage influences managers' choices about the extent of equity ownership in their partner; transaction hazards only motivate the choice of some equity over none. These findings provide insights to researchers regarding the validity or refinement of their theories going forward. Managers can also find value in these findings in terms of improving their decision-making quality about equity ownership levels in inter-firm relationships and becoming aware of the criteria that they may not fully or explicitly feature in their decision calculus.

REFERENCES

Ahmadjian C, Oxley J. 2006. Using hostages to support exchange: Dependence balancing and partial equity stakes in Japanese automotive supply relationships. *Journal of Law, Economics, & Organization* 22(1): 213-233.

Ai CR, Norton EC. 2003. Interaction terms in logit and probit models. *Economics Letters* 80(1): 123-129.

Aiman-Smith L, Scullen SE, Barr SH. 2002. Conducting studies of decision making in organizational contexts: A tutorial for policy-capturing and other regression-based techniques. *Organizational Research Methods* 5(4): 388-414.

Barney J. 1991. Firm resources and sustained competitive advantage. *Journal of Management* 17(1): 99-120.

Buckley PJ, Chapman M. 1997. The perception and measurement of transaction costs. *Cambridge Journal of Economics* 21(2): 127-145.

Coase R. 1998. The new institutional economics. *American Economic Review* 88(2): 72-74.

Conner K, Prahalad CK. 1996. A resource-based theory of the firm: Knowledge vs. opportunism. *Organization Science* 7(5): 477-501.

Conner KR. 1991. A historical comparison of resource-based theory and five schools of thought within industrial organization economics: Do we have a new theory of the firm? *Journal of Management* 17: 121-154.

Cook TD, Campbell DT. 1979. *Quasi-experimentation: Design and Analysis Issues of Field*

Settings. Houghton-Mifflin, Boston, MA.

David RJ, Han SK. 2004. A systematic assessment of the empirical support for transaction cost economics. *Strategic Management Journal* 25(1): 39-58.

Dyer JH, Singh H. 1998. The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review* 23(4): 660-679.

Folta TB. 1998. Governance and uncertainty: The tradeoff between administrative control and commitment. *Strategic Management Journal* 19: 1007-1028.

Ghoshal S, Moran P. 1996. Bad for practice: A critique of the transaction cost theory. *Academy of Management Review* 21(1): 13-47.

Gulati R, Lawrence PR, Puranam P. 2005. Adaptation in vertical relationships: Beyond incentive conflict. *Strategic Management Journal* 26: 415-440.

Gulati R, Singh H. 1998. The architecture of cooperation: Managing coordination costs and appropriation concerns in strategic alliances. *Administrative Science Quarterly* 43: 781-794.

Hagedoorn J, Duysters G. 2002. External sources of innovative capabilities: The preferences for strategic alliances or mergers and acquisitions. *Journal of Management Studies* 39(2): 167-188.

Hennart J-F, Reddy SB. 2000. Digestibility and asymmetric information in the choice between acquisitions and joint ventures: Where's the beef?. *Strategic Management Journal* 21(2): 191-193.

Hitt MA, Middlemist RD. 1979. A methodology to develop the criteria and criteria weightings for assessing sub-unit effectiveness in organizations. *Academy of Management Journal* 22(2): 356-374.

Hitt MA, Tyler BB. 1991. Strategic decision models: Integrating different perspectives. *Strategic Management Journal* 12(5): 327-351.

Jacobides MG, Winter SG. 2005. The co-evolution of capabilities and transaction costs: Explaining the institutional structure of production. *Strategic Management Journal* 26(5): 395-413.

Kale P, Puranam P. 2004. Choosing equity stakes in technology sourcing relationships: An integrative framework. *California Management Review* 46(3): 39-53.

Kale P, Puranam P. 2006. Why managers choose equity ownership in inter-firm relationships. In A. Arino and J. Reuer (Eds.), *Strategic Alliances: Governance and Contracts*. Palgrave Macmillan, London, U.K.

Karren RJ, Barringer MW. 2002. A review and analysis of the policy-capturing methodology in organizational research: Guidelines for research and practice. *Organizational Research Methods* 5(4): 337-361.

Kogut B. 1988. Joint ventures: Theoretical and empirical perspectives. *Strategic Management Journal* 9(4): 319-332.

Kogut B, Zander U. 1992. Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science* 3(3): 383-397.

Madhok A, Tallman S. 1998. Resources, transactions and rents: Managing value through inter-firm collaborative relationships. *Organization Science* 9(3): 326-339.

Madhok A. 2002. Reassessing the fundamentals and beyond: Ronald Coase, the transaction cost and resource-based theories of the firm, and the institutional structure of production. *Strategic Management Journal* 23(6): 535-550.

Milgrom P, Roberts J. 1992. *Economics, Organization and Management*. Prentice-Hall, Englewood Cliffs, NJ.

Monteverde K. 1995. Technical dialogue as an incentive for vertical integration in the semiconductor industry. *Management Science* 41(10): 1624-1638.

Pablo AL. 1994. Determinants of acquisition integration level: A decision-making perspective. *Academy of Management Journal* 37(4): 803-836.

Parkhe A. 1993. Strategic alliance structuring: A game-theoretic and transaction cost examination of inter-firm cooperation. *Academy of Management Journal* 36(4): 794-829.

Sampson RC. 2005. Experience effects and collaborative returns in R&D alliances. *Strategic Management Journal* 26(11): 1009-1031.

Sampson RC. 2007. R&D alliances and firm performance: The impact of technological diversity and alliance organization on innovation. *Academy of Management Journal* 50(2): 364-386.

Schilling MA, Steensma HK. 2002. Disentangling the theories of firm boundaries: A path model and empirical test. *Organization Science* 13(4): 387-401.

Steensma HK, Corley KG. 2000. On the performance of technology-sourcing partnerships: The interaction between partner interdependence and technology attributes. *Academy of Management Journal* 43(6): 1045-1067.

Steensma HK, Corley KG. 2001. Organizational context as a moderator of theories on firm boundaries for technology sourcing. *Academy of Management Journal* 44(2): 271-291.

Steensma HK, Fairbank J. 1999. Internalizing external technology: A model of governance mode choice and an empirical assessment. *Journal of High Technology Management Research* 10(1): 1-35.

Sutcliffe K, Zaheer A. 1998. Uncertainty in the transaction environment: An empirical test. *Strategic Management Journal* 19(1): 1-23.

Tyler BB, Steensma HK. 1995. Evaluating technological collaborative opportunities: A cognitive modelling perspective. *Strategic Management Journal* 16(5): 43-70.

Williamson OE. 1985. *The Economic Institutions of Capitalism*. Free Press, New York, NY.

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

Williamson OE. 1991b. The logic of economic organization. In O. E. Williamson and S. Winter (Eds.), *The Nature of The Firm*. Oxford University Press, New York, NY.

Zajac EJ, Olsen CP. 1993. From transaction cost to transactional value analysis: Implications for the study of interorganizational strategies. *Journal of Management Studies* 30(1): 131-145.

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APPENDIX

Constructing the Policy Capture Instrument

In the policy capture methodology, respondents are usually presented with a series of situations (scenarios) that are experimentally designed by manipulating levels of certain theoretically determined decision criteria. After reviewing the criteria in each scenario, respondents make a decision that best represents their judgment based on the information available (Aiman-Smith et al., 2002; Karren & Barringer, 2002). The manner in which respondents consider and weigh theoretically important decision criteria can be inferred by studying the derived statistical relationships between the dependent variable (i.e., the respondent's decision) and independent variables (various theoretical criteria that are hypothesized to influence the decision). Prior research has established the external validity of the policy capture technique (Hitt & Middlemist, 1979).

For our study, we developed a policy capture instrument with a hypothetical example of the respondent's company seeking a formal inter-firm relationship with another company ("Company B") to obtain technology and technological resources from that partner. Having decided to form a technology-sourcing relationship with Company B, the respondent's company now needs to decide the level of equity ownership it would like to take in that company based on the information provided on certain dimensions including those representing the theoretical factors of resource value or transaction hazards discussed in the article. Based on the hypothetical example, the instrument had 30 different partnering scenarios between the respondent's company and its potential technology partner. We created each partnering scenario by randomly assigning a different rating on a 1-5 scale where 1 = Very Low and 5 = Very High) for resource value, transaction hazards, and other theoretical dimensions. We provide one such scenario as an illustration below. Our approach to creating scenarios, by randomly assigning ratings on a numerical scale for each relevant theoretical factor, is similar to the one followed by prior studies (Hitt & Tyler, 1991, Steensma & Corley, 2001). Other policy capture studies have created scenarios, not by using a rating scale to manipulate each variable but by writing short descriptions of each situation in a story-like form wherein the levels of the relevant variables are varied qualitatively (e.g., Pablo, 1994). The advantage of our approach is that it avoids relying on the subjective interpretation of the respondents to maintain orthogonality of the manipulated factors.

We used a partial factorial design to create the 30 different partnering scenarios between the respondent's company and its technology partner. Scholars using the policy capture methodology routinely choose a small, manageable number of scenarios (as we have) rather than attempt full factorial designs (Aiman-Smith et al., 2002; Karren & Barringer, 2002; Tyler & Steensma, 1995). We presented the 30 scenarios to each respondent in different (randomly drawn) orders to minimize start-up effects for the first set of scenarios (Aiman-Smith et al., 2002). We created different scenarios by randomly assigning levels to these items such that the independent variables they represent are as close to orthogonal as possible (Hitt & Tyler, 1991) while ensuring that the scenarios are realistic. Random assignment helps make the constructs orthogonal, but sometimes it also can generate unrealistic scenarios. Since it is important to avoid such unrealistic scenarios in policy capture studies, we followed an iterative process of randomization followed by discarding unrealistic scenarios and further randomization. We finally generated a set of scenarios with acceptably low correlations between the key variables.

The construction of independent variables in policy capture studies differs from that in studies based on survey data. Rather than gather data on those variables from the respondents, here we provide data to them. The aim is not to ensure reliable measurement of the variables through multiple items but rather to ensure that respondents properly understand each item (Aiman-Smith et al., 2002; Karren & Barringer, 2002). For this reason, policy capture studies often rely on a few or even single items for each theoretical construct but take steps to ensure that they convey information unambiguously to respondents (Pablo, 1994). We took several steps to formulate items representing key variables. First, we selected the items based on prior research that have used either surveys (Poppo & Zenger, 1998; Schilling & Steensma,

2002) or the policy capture technique (Tyler & Steensma, 1995; Steensma & Corley, 2000). This ensured that each item adhered to the meaning of the theoretical construct of interest in our study. Second, the items used to represent relevant constructs need to be readily accessible to decision makers in a language they understand. Thus, as prior policy capture studies recommend, we iterated between the use of prior literature, field interviews (with senior managers responsible for their firms' strategic partnerships), and a pilot study (of 30 Executive MBA students at a major U.S. business school) to find the right wording for these items. Thus, the items not only reflect the appropriate theoretical constructs underlying them but are also comprehensible by managers (Karren & Barringer, 2002). The following is a sample scenario:

> Your company faces frequent technological change, and it seems difficult to rely on internal development alone to keep pace with all of the technological developments in your business. "R&D just keeps getting costlier and riskier for us, and customers want products yesterday!" moans your friend, the Vice President of R&D. Hence you are convinced that forming strategic partnerships with other firms to access their technology is the way forward. After screening hundreds of companies, your department has put together a set of 30 potential partner firms all of which have about 50-100 employees, and each has technological capabilities of value to your company. The CEO is willing to accept your proposal to partner with all of them. Now, assuming that cash is no constraint at the moment, he wants you to recommend an equity ownership structure for each proposed relationship. Also, you don't have to worry about the motivations of the partner for now; you can assume they are willing to go along with what you propose.
>
> Your task is to select an ownership structure for partnering with each firm that will best meet your objective, that is, gain access to cutting-edge technological resources. For each firm, your staff has done preliminary data gathering and provided ratings on a five-point scale on seven different attributes to guide your choice. A variety of equity ownership options is available for each partnership *(with the exception of joint ventures for legal reasons)*. Please assess each case and make your recommendation.
>
> Partner Firm 1

Attribute	***Very Low***				***Very High***
Extent of investments required by both parties to fully benefit from the partnership (e.g., investments in R&D, production, marketing) that are specific to the technology being accessed and cannot be used for other purposes	*1*	*2*	*3*	*4*	*5*
Extent to which we understand and can assess the market potential for the technology being accessed	*1*	*2*	*3*	*4*	*5*
Extent of resources we need to commit to manage the coordination and interaction between our company and the technology-providing company to exploit or leverage the technology being accessed	*1*	*2*	*3*	*4*	*5*
Extent to which the technology is significant to our business and competitive position	*1*	*2*	*3*	*4*	*5*
Extent to which we understand and can assess the relative benefits and viability of the technology being accessed	*1*	*2*	*3*	*4*	*5*
Extent to which competitors are likely to benefit from or be interested in this technology	*1*	*2*	*3*	*4*	*5*
Extent of restructuring required to divest unwanted resources and capabilities from the partner in case of acquisition	*1*	*2*	*3*	*4*	*5*

Assume that your company already has accepted your recommendation to partner with this company. Based on the information provided above, please choose the equity ownership structure for the partnership from among the following four choices (tick only ONE):

- Contractual agreement (no equity) [ ]
- Minority equity stake (< 25 percent equity) [ ]
- Significant non-majority stake (>= 25 percent but < 50 percent equity) [ ]
- Acquire (> 50 percent equity) [ ]