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DO FORMAL CONTRACTS AND RELATIONAL GOVERNANCE FUNCTION AS SUBSTITUTES OR COMPLEMENTS?

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Relational exchange arrangements supported by trust are commonly viewed as substitutes for complex contracts in interorganizational exchanges. Many argue that formal contracts actually undermine trust and thereby encourage the opportunistic behavior they are designed to discourage. In this paper, we develop and test an alternative perspective: that formal contracts and relational governance function as complements. Using data from a sample of information service exchanges, we find empirical support for this proposition of complementarity. Managers appear to couple their increasingly customized contracts with high levels of relational governance (and vice versa). Moreover, this interdependence underlies their ability to generate improvements in exchange performance. Our results concerning the determinants of these governance choices show their distinct origins, which further augments their complementarity in practice.

Transaction cost economics (TCE) has emerged as a common framework for understanding how managers craft governance arrangements. The general proposition of this literature is that managers align the governance features of interorganizational relationships to match known exchange hazards, particularly those associated with specialized asset investments, difficult performance measurement, or uncertainty (Williamson, 1985, 1991). In response to exchange hazards, managers may craft complex contracts that define remedies for foreseeable contingencies or specify processes for resolving unforeseeable outcomes. When such contracts are too costly to craft and enforce, managers may choose to vertically integrate.

Many have argued, however, that transaction cost economics overstates the desirability of either integration or explicit contractual safeguards in exchange settings commonly labeled as hazardous. This view recognizes that in many industries managers engage in complex, collaborative market exchanges that involve rather high levels of asset specificity and that are characterized by other known hazards (Hill, 1990; Dyer, 1997). Relational norms, such as trust, are viewed in this literature as substitutes for complex, explicit contracts or vertical integration (Granovetter, 1985; Bernheim and Whinston, 1998; Bradach and Eccles, 1989; Dyer and Singh, 1998; Gulati, 1995b; Uzzi, 1997; Adler, 2001). Based on this reasoning, trust and its underlying normative behaviors operate as a self-enforcing safeguard that is a more effective and less costly alternative to both contracts and vertical integration (Hill, 1990; Uzzi, 1997). Indeed, some contend that formal contracts may even undermine a firm's capacity to develop relational governance. Formal contracts may signal distrust of your exchange partner and by undermining trust, encourage, rather than discourage, opportunistic behavior (Ghoshal and Moran, 1996: 24, 27; Macaulay, 1963: 64; Fehr and Gachter, 2000). Taken together, these critiques view relational

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governance as a substitute for formal contracts. In the presence of relational governance, formal contracts are at best an unnecessary expense and at worst counter-productive.

In this paper, we advance and test an alternative argument: that formal contracts and relational governance function as complements. Rather than hindering or substituting for relational governance, well-specified contracts may actually promote more cooperative, long-term, trusting exchange relationships. Well-specified contracts narrow the domain and severity of risk to which an exchange is exposed and thereby encourage cooperation and trust. In addition, well-crafted contracts promote longevity in exchanges by increasing the penalties that accompany severing an exchange relationship. As discussed in the transaction cost literature, contracts also provide customized approaches and mutually agreed upon policies and procedures for dealing with necessary adaptations in an exchange (Williamson, 1991). This complementary relationship may also function in reverse. The continuity and cooperation encouraged by relational governance may generate contractual refinements that further support greater cooperation. Relational governance may heighten the probability that trust and cooperation will safeguard against hazards poorly protected by the contract. Finally, relational governance may help overcome the adaptive limits of contracts: a bilateral commitment to 'keep-on-with-it' despite the unexpected complications and conflicts.

We empirically test whether relational governance and formal contracts operate as complements or substitutes using data on outsourcing relationships in information services during the early 1990s. The data were collected from surveys of senior managers regarding their sourcing of various information services, such as data entry, software application development, data network design, and network maintenance. During the time period of this survey, outsourcing of information services was escalating, accompanied by considerable debate in the popular press about the merits of outsourcing and the merits of various outsourcing arrangements (Clemons and Row, 1991; McFarlan, 1990; McFarlan and Nolan, 1995; Lacity, Willcocks, and Feeny, 1995, 1996). Perhaps as a consequence of such debate and as a consequence of variation in the underlying exchange conditions, the structure of outsourcing arrangements varied widely. Some managers developed long-term supply relations with their vendors; others spent considerable time and money customizing formal contracts. Still others appear to have done both. Using this variation in the structure of outsourcing relationships, we empirically test the relationship between formal contracts and relational governance and their effects on exchange performance.

FORMAL CONTRACTS

Formal contracts represent promises or obligations to perform particular actions in the future (Macneil, 1978). The more complex is the contract, the greater is the specification of promises, obligations, and processes for dispute resolution. For example, complex contracts may detail roles and responsibilities to be performed, specify procedures for monitoring and penalties for noncompliance, and, most importantly, determine outcomes or outputs to be delivered. According to the logic of transaction cost economics, the manager's task is to craft governance arrangements with minimal cost that ensure the delivery of the desired quantity, price, and quality of a supplier's services. The manager, therefore, crafts governance arrangements to match the exchange conditions that accompany various services. As exchange hazards rise so must contractual safeguards (Williamson, 1985; Klein, Crawford, and Alchian, 1978), which act to minimize the costs and performance losses arising from such hazards (Joskow, 1988; Macneil, 1978; Heide, 1994). Because crafting a complex contract is costly, parties undertake such a cost only when the consequences of a contractual breach are considerable.

Transaction cost economics scholars commonly point to three categories of exchange hazards that necessitate contractual safeguards (or vertical integration): asset specificity, measurement difficulty, and uncertainty. Asset specificity emerges when sourcing relationships require significant relationship-specific investments in physical and/or human assets. The presence of these specific assets transforms an exchange from a world of classical contracting in which the 'identity of parties is irrelevant' into a world of neoclassical contracting in which the identity of exchange partners is of critical importance (Williamson, 1991). For example, an information service (IS) provider may need to customize a service offering to the clients' work

setting. Similarly, the client may need to develop a unique understanding of the provider's procedures, approach, and language to effectively utilize their services. In such circumstances, the continuity of an exchange becomes vital to its effectiveness. Severing the relationship results in the forfeiture of the value of these specialized investments. Through threats to terminate the relationship, one or both contractual parties may seek to appropriate returns from these specialized investments. To safeguard against such hold-up behavior, managers adopt neoclassical contracts, which promote the longevity of relationships by specifying not only required actions and conditions of contractual breach, but also a framework for resolving unforeseen disputes. Empirical work demonstrates the predicted relationship: asset specificity increases the complexity of contracts (Joskow, 1988).

Difficulty in measuring the performance of exchange partners also generates market hazards. Markets succeed when they can effectively link rewards to productivity—that is, they can measure productivity and pay for it accordingly (Alchian and Demsetz, 1972). When performance is difficult to measure, parties have incentives to limit their efforts toward fulfilling the agreement. Managers have two choices. They can realize lower performance because of their inability to measure performance, or expend resources to improve performance measurement by creating more complex contracts that specify delivered service levels or facilitate the monitoring of a supplier's behaviors. For example, clauses may specify third party monitoring, disclosure of necessary documents to justify work done, and, if possible, the use of benchmarks to gauge the performance of the work done. Thus, as measurement becomes more difficult, we expect managers to develop more complex contracts, which enable them to accurately measure and reward productivity.

Uncertainty, a third hazard, also challenges an exchange by requiring the parties to adapt to problems raised from unforeseeable changes. In this study, we focus on uncertainty arising from rapidly changing technology. In general, markets are a marvel at autonomous adaptation, particularly when prices serve as sufficient statistics to induce changes in supply and demand (Williamson, 1991: 287). However, for more complex forms of adaptation that require coordination among parties, simple market governance is not adequate as it lacks coordinating capabilities. Contracts, however, have access to such capabilities through the specification of clauses and procedures that facilitate negotiations that invariably arise from technological changes.

High levels of uncertainty in conjunction with measurement difficulty or asset specificity render contracting even more hazardous (Williamson, 1985). High uncertainty may, for instance, particularly discourage a supplier from making specialized asset investments absent appropriate safeguards. Similar reasoning applies to measurement difficulty. If the underlying technology is rapidly changing, difficulty in measuring the performance of the services rendered with the technology may stretch the limits of contracting. Williamson (1985: 80) proposes that under these combinations of hazards, 'transaction[s] may "flee" to one of the polar extremes as the degree of uncertainty increases.' Thus, firms may choose to vertically integrate or seek to alter the exchange to a shorter-term, more arm's-length exchange. TCE maintains that vertical integration, which has access to fiat, better information disclosure, and alternative incentive mechanisms, may cope more effectively with such combinations of hazards.

In sum, asset specificity, measurement difficulty, and technological uncertainty create exchange hazards that encourage more complex contracts. Associated with these more complex contracts are additional costs of contracting. Ignoring these added costs, crafting complex contracts as an efficient response to hazardous exchange settings should enhance exchange performance (Masten, 1993, 1996). More complex contracts deter behaviors that could compromise the performance of a buyer–supplier exchange. Thus:

> *Hypothesis 1: Increases in exchange hazards encourage more complex contracts.*

RELATIONAL GOVERNANCE

Many scholars, including transaction cost economists, have observed that the governance of interorganizational exchanges involves more than formal contracts. Interorganizational exchanges are typically repeated exchanges embedded in social relationships. Governance emerges from the values and agreed-upon processes found in social relationships (Macneil, 1978, 1980; Noordewier, John, and Nevin, 1990; Heide and John, 1992), which may

minimize transaction costs as compared to formal contracts (Dyer, 1996; Dyer and Singh, 1998).

For such relationally-governed exchanges, the enforcement of obligations, promises, and expectations occurs through social processes that promote norms of flexibility, solidarity, and information exchange. Flexibility facilitates adaptation to unforeseeable events. Solidarity promotes a bilateral approach to problem solving, creating a commitment to joint action through mutual adjustment. Information sharing facilitates problem solving and adaptation because parties are willing to share private information with one another, including short- and long-term plans and goals. As the parties commit to such norms, mutuality and cooperation characterize the resultant behavior.

Through these social processes and the resulting norms, relational governance may function to mitigate the precise exchange hazards targeted by formal contracts—hazards associated with exchange-specific asset investments, difficult performance measurement, and uncertainty. The expectations of continuity that accompany relational governance generate incentives to invest in exchange-specific investments. These investments are protected by the mutually-imposed costs of termination. Similarly, expectations of longevity minimize the need for precise performance measurement in the short run. Parties to the exchange expect that short-term inequities will be corrected in the long term. Finally, norms of cooperation and mutual adaptation provide the flexibility to cope with inevitable uncertainties that arise in an exchange. As widely discussed in the management literature, norms of flexibility, information sharing, and commitment thus help circumvent the potentially high costs of exchange hazards (Macaulay, 1963; Dore, 1983; Palay, 1984; Granovetter, 1985, 1992; Bradach and Eccles, 1989; Jones, Hesterly and Borgatti, 1997; Adler, 2001).

The mechanisms through which relational governance attenuates exchange hazards are both economic and sociological in nature. Economists emphasize the rational, calculative origins of relational governance, emphasizing particularly expectations of future exchanges that prompt cooperation in the present. Sociologists emphasize socially derived norms and social ties that have emerged from prior exchange (Uzzi, 1997: 45). Trust is therefore considered a trait that becomes embedded in a particular exchange relation. In essence, once an exchange partner is granted 'trustworthy' status, they are expected to behave in a trustworthy fashion in the future. For economists, the trustworthy status is conditional upon the benefits that accrue from trustworthy status over time (e.g., repeated exchange) contrasted with the benefits that accrue from self-interested moves that break from the trustworthy status (Klein, 1996). This logic, common to game theory, argues that expectations of pay-offs from future cooperative behavior encourage cooperation in the present (Baker, Gibbons and Murphy, 2002). Williamson (1996: 97) concludes that the term trust is misleading, given the above economic logic, arguing that 'because commercial relations are invariably calculative, the concept of calculated risk (rather than calculated trust) should be used to describe commercial transactions.'

Nonetheless, there is considerable overlap in the arguments of sociologists and economists surrounding trust and cooperation and we will therefore not attempt to offer any systematic distinction. Both sociologists and economists, for instance, argue that repeated exchange encourages effective exchange, and that repeated exchange provides information about the cooperative behavior of exchange partners that may allow for informed choices of who to 'trust' and who not to trust. In addition, while the mechanism may differ slightly, both economists and sociologists emphasize that reputations for trustworthy behavior are rewarded and reputations for untrustworthy behavior punished in the broader network of potential exchange partners.

Empirical work generally shows that relational governance is associated with trust and that trust improves the performance of interorganizational exchanges (Palay, 1984; Heide and John, 1990; Zaheer and Venkatraman, 1995; Mohr and Spekman, 1994; Saxton, 1997; Zaheer, McEvily, and Perrone, 1998). Yet, the development and maintenance of relational governance with its dense network of social ties may involve considerable cost in terms of time and resource allocation (Larson, 1992). Furthermore, dense social ties in economic exchanges may restrict firms from new information and new opportunities (Uzzi, 1997; Gargiulo and Benassi, 2000). This reasoning suggests that firms should invest in the development of relational governance only when significant hazards are present. Absent these hazards, incurring the costs of relational governance may not be warranted. Nonetheless, the pervasive logic in the relational

governance literature is that relational governance positively affects exchange performance (Dyer, 1996; Saxton, 1997; Zaheer *et al.*, 1998). Among contractual exchanges (those neither integrated nor managed through spot market contracts), we hypothesize the following:

> *Hypothesis 2: Increases in exchange hazards will lead to more relational governance.*

RELATIONAL GOVERNANCE AND FORMAL CONTRACTS AS SUBSTITUTES

Academic research in economics and sociology has generally viewed relational governance and formal contracts as substitutes—the presence of one governance device (relational governance, in particular) obviates the need for the other (Larson, 1992; Gulati, 1995b; Dyer and Singh, 1998; Macaulay, 1963). In particular, trust reduces transaction costs by 'replacing contracts with handshakes' (Adler, 2001). Thus, Dyer and Singh (1998) argue that informal self-enforcing agreements which rely on trust and reputation 'often supplant' the formal controls characteristic of formal contracts. Gulati (1995b: 93) is quite explicit in arguing that contracts and trust function as substitutes:

> ...trust avoids contracting costs, lowers the need for monitoring, and facilitates contractual adaptation. Trust counteracts fears of opportunistic behavior and as a result, is likely to limit the transaction costs associated with an exchange. ... In other words, trust can *substitute* for hierarchical contracts in many exchanges ... (emphasis added)

Similarly, Uzzi (1997) argues that the embeddedness of exchanges within social structures circumvents and thus economizes on time otherwise spent in costly contract renegotiations. Finally, Larson (1992: 98) argues that formal contracts are rather unimportant in the exchange agreements she examined. Informal social controls push these formal contracts to the background. A common underlying rationale for substitution emerges: if one party trusts the other, there is simply little need for contractually specifying actions. Relational governance lowers transaction costs and facilitates adaptive responses.

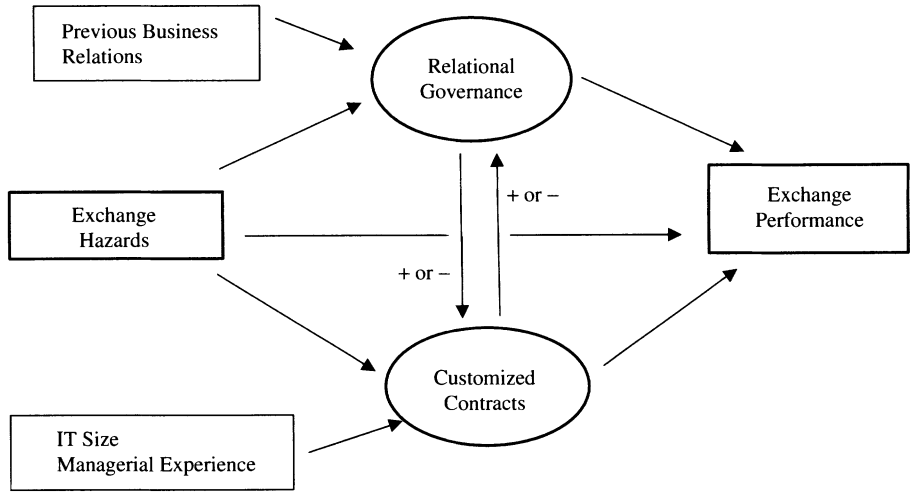
Still other scholars suggest an additional reason for substitution: formal contracts may actually undermine the formation of relational governance. Ghoshal and Moran (1996) argue that the use of rational, formal control has a pernicious effect on cooperation.[1] They contend that for those parties being controlled

> ...the use of rational control signals that they are neither trusted nor trustworthy to behave appropriately without such controls. ... For the controller, negative feelings arise from what Strickland (1958) described as 'the dilemma of the supervisor' viz., the situation when the use of surveillance, monitoring, and authority led to management's distrust of employees and perceptions of an increased need for more surveillance and control ... (Ghoshal and Moran, 1996: 24)

Similarly, Macaulay (1963: 64) contends 'Not only are contracts and contract law not needed in many situations, their use may have, or may be thought to have, undesirable consequences. ... Detailed negotiated contracts can get in the way of creating good exchange relationships between business units.' He further argues that some firms discourage the use of an elaborate contract because it 'indicates a lack of trust and blunts the demands of friendship, turning a cooperative venture into an antagonistic horsetrade' (Macaulay, 1963: 64). Consistent with this logic, Bernheim and Whinston (1998) develop a formal model and show that making contracts more explicit may encourage opportunistic behavior surrounding actions that cannot be specified within contracts. Taken together, these scholars view relational governance and formal contracts as substitutes, which operate through one of two mechanisms. Either relational governance eliminates the need for formal contracts and vice versa, or formal contracts directly hinder the formation of relational governance.

In light of this predicted substitution, the net effects of formal contracts and relational governance on exchange performance are ambiguous. While relational governance and formal contracts may have positive direct effects on exchange performance, because they function as replacements for one another (or in the case of formal contracts causally damage the other), the net effect on exchange performance is, at a minimum, reduced and potentially negative. Evidence of a substitution

[1] Interestingly, Williamson (1996a: 271) makes a similar argument, but restricts its application to purely social, noneconomic relationships.



Notes:
+ = Positive relationship, support for *Complements* (H4a, H4b)
– = Negative relationship, support for *Substitutes* (H3a, H3b)

Figure 1. Empirical Model

effect on performance exists if both relational governance and contract complexity positively influence performance, but negatively influence one another.

Following from the above arguments, we hypothesize (see Figure 1):

Hypothesis 3a: Increases in contractual complexity discourage the formation of relational governance.

Hypothesis 3b: Increases in relational governance discourage the use of complex contracts.

Hypothesis 3c: Contractual complexity and relational governance will function as substitutes in explaining exchange performance.

RELATIONAL GOVERNANCE AND FORMAL CONTRACTS AS COMPLEMENTS

Despite compelling arguments for viewing relational governance and contractual complexity as substitutes, the logic for viewing them as complements appears equally compelling. In settings where hazards are severe, the combination of formal and informal safeguards may deliver greater exchange performance than either governance choice in isolation. The presence of clearly articulated contractual terms, remedies, and processes of dispute resolution as well as relational norms of flexibility, solidarity, bilateralism, and continuance may inspire confidence to cooperate in interorganizational exchanges.

We noted earlier that economic models of relational governance (Klein, 1996; Baker *et al.*, 2002) highlight the role of simple repeated exchange in motivating long-term cooperation. In such models the expected pay-offs from a pattern of future exchange deters the pursuit of short-run gains that undermine the longevity of the relationship. Contracts not only have this source of advantage because of their formal specification of a long-term commitment to exchange, but through clearly articulated clauses that specify punishments they also limit the gains from opportunistic behavior. This reduction in short-run gains heightens comparatively the gains from cooperating in the exchange relationship. By contrast, failing to contractually specify elements of the exchange that are easily specified merely heightens incentives for short-run cheating and lowers expectations of cooperation (Baker, Gibbons and Murphy, 1994). Thus, the specification of contractual safeguards promotes expectations that the other party will behave cooperatively and thus complements the informal limits of relational

governance. Cooperative behavior in the present then reinforces an expectation of cooperation in the future. Supportive of this logic, empirical work suggests that past success in contracting with a particular exchange partner yields greater success in the present (Larson, 1992). Formal contracts help ensure that the early, more vulnerable stages of exchange are successful.

Long-term contracts are also explicitly drafted with provisions to promote the longevity of exchanges. Unexpected disturbances may place considerable strain on an exchange relationship (Williamson, 1991: 271–273). Contracts that shift from merely specifying deliverable outcomes to providing frameworks for bilateral adjustments may facilitate the evolution of highly cooperative exchange relations. In addition, the process of contracting may itself promote expectations of cooperation consistent with relational governance. The activity of creating complex contracts requires parties to *mutually* determine and commit to processes for dealing with unexpected changes, penalties for noncompliance, and other joint expectations of trade. Thus, the process of developing complex contracts in response to exchange hazards positively affects future exchange performance through the development of social relations (i.e., relational governance) as well as complements relational governance through the formal specification of limits and expectations.

The complementary relationship between relational governance and formal contracts may work in reverse, as well. Regardless of the duration of an exchange, vast dimensions of the exchange may prove impossible to contractually specify; managers are clearly constrained in their capacity to foresee and contractually resolve potential future contingencies. As a result, when unforeseen disturbances arise, contracts in and of themselves are unable to maintain the continuity of the relationship. Formally specified processes for adapting to change promote longevity in the exchange, but do not guarantee continuance or a mutually acceptable, bilateral resolution. Thus, contracts alone may serve simply to facilitate termination of an exchange as courts use it to review the broken aspects of the contract and then allocate assets between the parties on some basis deemed equitable (Macneil, 1978: 875).

Relational governance becomes a necessary complement to the adaptive limits of contracts by fostering continuance and bilateralism when change and conflict arise (Macneil, 1978: 876, 883). The relational value of solidarity figures prominently in promoting exchange into the future: it ensures a 'keep on with it' attitude such that each party desires to and is able to depend on the other (Macneil, 1980: 92). Thus, managers choose relational governance, as contracts become increasingly customized, to increase the odds of continuance, and thereby further safeguard specific investments from premature and costly termination.

Relational governance may also promote the refinement (and hence increased complexity) of formal contracts. As a close relationship is developed and sustained, lessons from the prior period are reflected in revisions of the contract. Exchange experience, patterns of information sharing, and evolving performance measurement and monitoring may all enable greater specificity (and complexity) in contractual provisions. As a consequence, relational exchanges may gradually develop more complex formal contracts, as mutually agreed upon processes become formalized.

In sum, the argument for complementarity suggests positive reciprocal relationships between relational governance and formal contracts (see Figure 1). Formal contracts promote relational governance in exchange settings and relational governance enables the refinement of contracts and promotes stability in interorganizational exchanges. Further, due to this complementarity, the combination of relational governance and formal contracts should generate higher exchange performance than either governance mechanism in isolation. Thus, we hypothesize:

Hypothesis 4a: Increases in contractual complexity will increase the level of relational governance.

Hypothesis 4b: Increases in relational governance will enhance contractual complexity.

Hypothesis 4c: Contractual complexity and relational governance will function as complements in explaining exchange performance.

DATA AND METHODS

Data collection

We obtained data for this study through a survey instrument. Respondents to this survey were

key informants, IS executives who held one of two positions: (1) the senior corporate IS manager who provided overall guidance and planning for information services, or (2) the manager who had control over major data-processing facilities in operating departments, divisions, and subsidiaries. These individuals both managed and reviewed outsourced IS activities. Our list of key informants came from the *Directory of Top Computer Executives*. This directory, which has been in existence since 1972, included top computer executives of *Fortune* 500 companies and any other companies with an annual data-processing budget of $250,000 or more. Unlike previous studies, which constrained their samples to single industries (Mohr and Spekman, 1994; Goodman *et al.*, 1995; Zaheer and Venkatraman, 1995), we sought to enhance the external validity of this study by using a broader population of key informants.

Obtaining survey responses from corporate-level managers is rather problematic, and response rates among IS executives are particularly low.[2] A common technique in surveying executives is to define populations and response rates based on those who will precommit to respond. Although not necessarily reported (Heide and John, 1990, 1992; Mohr and Spekman, 1994), such precommitment rates appear to be quite low, about 10 percent (Anderson and Narus, 1990), while the response rates based on the precommitted sample are at acceptable levels, greater than 40 percent. Partly to avoid the potential for sampling bias from this method, we instead chose to mail surveys to a randomly selected set of 3000 names from the *Directory of Top Computer Executives.* We obtained 181 responses and 152 of these were usable. To gauge comparability with studies that use a precommitment technique, we performed a supplemental telephone survey of 300 names from the *Directory* soliciting completion precommitments. Eleven percent responded that they would complete surveys. Extrapolating this number to the broader population of names suggests that our response rate is quite consistent with studies that use precommitment techniques (Anderson and Narus, 1990; Mohr and Spekman, 1994).[3] The survey requested information on nine commonly used information services for which there is variance in exchange attributes: data entry, data center operations, network design, network operations (data), network operations (voice), end user support, training and education, applications development, and applications maintenance. For purposes of data analysis, the unit of analysis is the outsourced service, resulting in a total sample of 345 observations. Due to missing data, the core sample for data analysis is 285.[4]

To test for a potential response bias in our sample, we compared the industries and the geographic locations represented in the sample to the population. We found that manufacturing firms were underrepresented in the sample by about 15 percent. One explanation for this bias is that manufacturing companies tended to be larger and therefore more bureaucratic than service companies. Authorization is more of a challenge to obtain in a bureaucratic organization, leading to lower response rates (Tomaskovic-Devey, Leither, and Thompson, 1994). The sample and population did not appear to differ by geographic location.

We also used a procedure suggested by Armstrong and Overton (1977) to further test for a nonresponse bias. We compared early-returned questionnaires to late-returned questionnaires on a number of variables: respondent position, company size, industry, IS attributes, and performance. The assumption of this analysis is that late respondents share similar characteristics and response biases with nonrespondents. Analyses indicated that no significant mean differences existed between early and late respondents. Our data on the exchange relations are from the buyers' perspective. While informant bias is possible, buyers' and suppliers' perceptions of exchanges appear to be quite consistent (Anderson and Narus, 1990; Heide and John, 1990, 1992; Zaheer *et al.*, 1998). Hence, we found no evidence of obvious response bias in the sample, other than the underrepresentation of manufacturing companies.

[2] Rapid technological change, considerable investment in information technology, and widespread interest in outsourcing had made IS managers a common target of surveys, particularly from vendors. Several industry contacts indicated that at the time of the survey (1992) IS executives were receiving three to five surveys a week.

[3] One of the advantages of a precommitment approach is that bad addresses caused by turnover, location changes, and general organizational changes are avoided. While the publishers of the *Directory of Top Computer Executives* are quite thorough in updating their database on a yearly basis, they estimate that more than half have some change to their addresses each year.

[4] Note that most firms source the majority of these activities internally. These internal sourcing arrangements were not part of this study.

While we believe our sample is without response bias, there remains a potential problem of sample selection bias (Heckman, 1979; Masten, 1993; Poppo and Zenger, 1998; Artz and Brush, 2000). The choice as to whether a particular exchange is internalized or outsourced is determined theoretically by the independent variables (i.e., hazards) in our model. Thus, if theory holds, our sample of customized contracts and relational governance as compared to vertical integration should have a restricted range on such variables. For example, exchanges with very high levels of asset specificity or measurement difficulty will simply be internalized and therefore not exist in our sample of outsourced exchanges. Calculating and including an inverse Mills ratio is a common method for correcting sample selection bias in OLS models. Our model is a three-stage least squares procedure and therefore not fully suited for this correction procedure. However, including the inverse Mills ratio may provide a good first approximation in correcting for sample selection bias. The inverse Mills ratio is calculated from a probit model predicting whether a particular observation is included or excluded from the sample; in this case, whether the exchange is internalized or outsourced. Fortunately, our data include both vertically integrated and market-based exchanges and therefore permit us to calculate this common adjustment factor, and a previous paper using this data set (Poppo and Zenger, 1998) focuses precisely on this modeling technique. The inclusion of this ratio in our three-stage least squares model generates results consistent with those presented and provides some confidence that such bias is not dramatically altering our results.

Measurement

Questionnaire items, unless stated otherwise, were measured using a 7-point scale in which '1' represented 'low degree' and '7' represented 'high degree.' Table 1 presents the means and correlations for each of the measures in the study.

Performance

When measuring exchange performance, most work in transaction cost economics focuses on governance efficiency (Masten, Meehan and Snyder, 1991; Walker and Poppo, 1991; Uzzi, 1997; Artz and Brush, 2000). Yet, to incorporate both production and governance efficiency, we examine overall satisfaction with exchange performance, rather than governance costs (see Poppo and Zenger, 1998). This composite measure is consistent with previous measurements of alliance performance found in the strategy literature (Mohr and Spekman, 1994; Saxton, 1997). The underlying logic of our composite measure is that satisfaction is a focal consequence of a working partnership. It is not only a close proxy for concepts such as perceived effectiveness, but is also predictive of future actions by partner firm managers (Gladstein, 1984). At the same time, however, by not assessing governance costs directly, we are constrained in our capacity to assess optimal levels of governance. Thus, absent costs, more relational governance or contractual complexity should be preferred.

Previous empirical studies measure partnership satisfaction as the level of buyers' satisfaction with exchange performance (Anderson and Narus, 1990; Mohr and Spekman, 1994; Saxton, 1997). The degree of satisfaction was measured using a 7-point scale in which '1' represented 'dissatisfied' and '7' represented 'satisfied.' We measured satisfaction with: (1) the overall cost of the service (Proposition 1); (2) the quality of the output or service (Proposition 2); and (3) the vendor's responsiveness to problems or inquiries (Proposition 3) (Cronbach alpha = 0.84).

Relational governance

In this study, we view relational governance as a composite factor with the following underlying norms and dimensions: open communication and sharing of information, trust, dependence, and cooperation. This specification is consistent with previous measurement (Macneil, 1978; Anderson and Narus, 1990). We modified three indicators from these empirical studies and asked the key informant to indicate their degree of agreement with each of the following statements using a 7-point scale (1 = strongly disagree, 7 = strongly agree): (1) the buyer has an extremely collaborative relationship with the vendor (RG1); (2) both parties share long- and short-term goals and plans (RG2); and (3) the buyer can rely on the vendor to keep promises (RG3) (Cronbach alpha = 0.78).

Table 1. Descriptive Statistics

	AS1	AS2	SW	CH1	CH2	Meas	Long	Tenure	Budget	Manu	Bank	Insur	Contract	RG1	RG2	RG3	P1	P2	P3
Correlations																			
AS1	1.000																		
AS2	0.701	1.000																	
SW	0.473	0.549	1.000																
CH1	0.263	0.350	0.374	1.000															
CH2	0.320	0.389	0.429	0.698	1.000														
Meas	−0.081	−0.062	−0.069	0.121	0.009	1.000													
Long	−0.015	−0.097	−0.084	0.026	0.035	−0.074	1.000												
Tenure	0.037	0.078	0.192	0.037	0.059	0.069	0.065	1.000											
Budget	0.123	0.223	0.226	0.138	0.125	−0.084	0.079	0.176	1.000										
Manu	−0.166	−0.238	−0.163	0.032	−0.070	0.127	0.046	0.070	−0.090	1.000									
Banking	0.155	0.107	0.089	0.049	−0.019	0.027	0.104	−0.039	0.127	−0.212	1.000								
Insur	0.164	0.137	0.115	0.072	0.075	0.071	−0.016	−0.033	0.053	−0.103	−0.037	1.000							
Contract	0.181	0.249	0.173	0.009	0.072	−0.098	0.069	0.260	0.373	−0.256	−0.017	−0.037	1.000						
RG1	0.025	0.048	0.064	0.120	0.084	−0.113	0.470	0.025	−0.028	0.047	0.013	−0.070	0.002	1.000					
RG2	0.089	0.122	0.185	0.091	0.125	−0.092	0.346	0.140	0.163	−0.136	0.031	0.015	0.252	0.628	1.000				
RG3	−0.030	−0.019	0.006	−0.005	0.004	−0.078	0.247	0.126	0.105	−0.054	−0.019	−0.145	0.043	0.586	0.456	1.000			
P1	−0.196	−0.198	−0.166	−0.155	−0.176	−0.185	0.117	−0.035	−0.004	0.054	−0.203	−0.135	−0.080	0.359	0.250	0.429	1.000		
P2	−0.080	−0.125	−0.100	−0.054	−0.089	−0.038	0.206	−0.024	0.121	−0.013	−0.038	−0.003	−0.034	0.471	0.319	0.567	0.565	1.000	
P3	−0.078	−0.140	−0.164	−0.053	−0.049	−0.004	0.170	0.021	0.180	−0.009	−0.019	−0.111	0.055	0.418	0.290	0.583	0.536	0.740	1.000
Mean	4.377	4.474	3.967	4.476	4.439	2.442	3.818	12.062	15.475	0.364	0.077	0.026	2.963	4.532	3.854	4.983	4.667	4.948	4.707
S.D.	1.654	1.705	1.689	1.645	1.552	1.349	1.684	8.444	1.596	0.482	0.267	0.158	1.838	1.532	1.728	1.362	1.442	1.294	1.493

Note: $p \leq 0.05$ for $|\rho| \geq 0.10$

Contractual complexity

Following Macneil (1978), we measured the degree to which the parties created a complex contract to deal with future contingencies by asking key informants to indicate their level of agreement (Contract, 1 = strongly disagree, 7 = strongly agree) with the following statement: the formal contract is highly customized and required considerable legal work. The measurement of this construct by a single item is limiting. To further validate this measure, our survey also requested respondents to indicate the length of the contract (in pages), which previous work has shown as an indicator of contractual complexity (Joskow, 1988). While a lower response rate for this question precluded its use as a second indicator of a complex contract, the correlation between the two items was significant ($\rho = 0.65$).

Asset specificity

Firm-specific assets were defined by human assets, physical assets, and company-specific routines and knowledge that were not redeployable to alternative uses (Williamson, 1985). Since human capital is a critical component of information services, our measurement focused primarily on specialized human assets, such as knowledge and skills. We used three items to measure the degree to which the assets used to produce an information service were custom-tailored to the buying firm: (1) To what degree must individuals acquire company-specific or division-specific information to adequately perform the IS function? (AS1); (2) To what degree is your approach to this function (or set of applications) custom-tailored to the company? (AS2); and (3) How costly would it be to switch outsourcing vendors? (Consider the time required to locate, qualify, train, make investments, conduct testing, and develop a working relationship) (SW) (Cronbach alpha = 0.83).

Measurement difficulty

Our measurement focused on the level of ease in measuring worker performance: To what degree is it easy to measure the collective performance of those individuals who perform this function? (Meas, 1 = very difficult, 7 = very easy). We reverse scored this item to create a measure of measurement difficulty.

Technological change

In general, information services have had high levels of technological change. Still, there is likely to be variation in the level of technological stability across industries, firms, and services. We measured the degree of change in both skills and technology using two items: (1) To what degree are the underlying skills associated with this IS function (or set of applications) rapidly changing? (CH1); and (2) To what degree is the optimal configuration of hardware and software required to perform this function (or set of applications) rapidly changing? (CH2) (Cronbach alpha = 0.84).

Longevity of relationship

A key determinant of relational governance is the duration of time that the two parties have worked with one another because a history of trade is necessary for the development of relational norms (Macneil, 1978, 1980). We measured this construct using a 7-point scale (Long, 1 = strongly disagree, 7 = strongly agree) and the following item: the buyer has worked with the vendor for years and years. This measure is used as an identifying instrument in our equation predicting *relational governance.*

Tenure and IS budget

We use measures of the firm's IS budget and the IS director's experience as identifying instruments in the contractual complexity equation. We expect that firms with greater IS resources will develop more customized contracts. In our study, top managers' experience in IS proxies for firm knowledge about outsourcing. We expect managers will heighten the complexity of contracts as experience increases. In addition, we expect firms with larger IS budgets are also likely have in-house legal counsel with experience in drafting complex contracts. We have no theoretical basis for believing either construct is related to relational-governance. Our measure of resource scale is the natural log of size of the operating budget for IS (Budget). Our measure of experience is the job tenure in years (ln) of the IS executive (Tenure). These measures are used as identifying instruments in the equation predicting contract complexity.

Controls

Because significant variance in industry exists for our sample of firms that outsource IS, we control for potential differences that might exist in outsourcing practices. We also use dummy measures to control for the primary business in which the firm operates: banking/financial services (Banking), manufacturing (Manu), and insurance (Insur).

Method

Our hypotheses require that we test a system of equations simultaneously, since both contractual complexity and relational governance are endogenously determined. First, we must test whether contractual complexity is influenced by the scope of exchange hazards and by the extent of relational governance. Second, and simultaneously, we must test whether relational governance is influenced by the scope of exchange attributes and by contractual complexity. Finally, we must examine the effects of relational governance and contractual complexity on performance, while modeling the effects these constructs have on one another and while controlling for exchange hazards. Specifying and testing these three equations independently would, of course, introduce significantly biased estimates due to the endogeneity of key independent measures in all equations and due to common disturbances across equations. More importantly, by correctly specifying this system of equations, we can test for a pattern of substitution or complementarity between relational governance and contractual complexity.

Our econometric approach is a simultaneous equation estimation using a three-stage least squares method (Greene, 1997; Stata, 1999; Nickerson, Hamilton, and Wada, 2001). This method uses instrumental variables to produce consistent estimates and generalized least squares (GLS) to account for correlation in the disturbances across equations (Stata, 1999). Stage 1 of this procedure can be thought of as producing instrumented values of all endogenous variables: in this case, relational governance and contractual complexity. These instrumented values are essentially predicted values generated by the regression of each endogenous variable on all exogenous variables in the system. Stage 2 produces a consistent estimate of the covariance matrix of the equation disturbances. Estimates are obtained from the residuals produced from a two-stage least squares estimation of each structural equation. Finally, Stage 3 performs a GLS-type estimation using the covariance matrix from Stage 2 and with the instrumented values replacing all endogenous right-hand side variables.

Using this system of equations, we can test for a pattern of substitution or complementarity between relational governance and contractual complexity. Primary support for complementarity exists if relational governance positively affects contractual complexity and contractual complexity positively affects relational governance. Support for the substitution hypotheses exists if these relationships are negative. We also test for the presence of a complementary effect of contractual complexity and relational governance on exchange performance by examining the direction of these relationships in conjunction with the performance equation (see Figure 1). Since our measure of performance is a satisfaction measure, which does not directly encompass the costs of generating performance, our prediction is that, net of costs, increases in contractual refinement and relational governance increase exchange performance. Our test in the performance equation is thus: after controlling for the direct effects of hazards on exchange performance, does more relational governance, encouraged in part by greater contractual complexity, increase exchange performance? Similarly, after controlling for the direct effects of hazards on exchange performance, does more contractual complexity, encouraged in part by greater relational governance, increase exchange performance?

An alternative test of complementarity or substitution in the performance equation is to specify an interaction term between relational governance and contractual complexity in a simple OLS regression model of exchange performance. This specification allows us to test whether the marginal effects of relational governance (or contractual complexity) rise as contractual complexity (or relational governance) increases. Using this method, we found a strong positive and significant interaction effect, consistent with the prediction of complementarity (Hypothesis 4a–c). However, this specification is problematic, because both relational governance and contractual complexity are endogenously determined. Nonetheless, the strength of the empirical result and its consistency with the findings of the reported three-stage least squares

model provides some confidence that our finding of complementarity is robust.

RESULTS

Table 2 presents the results of our estimation. We show three different model specifications. Our base model (see M1) contains no interaction terms for the exchange hazards, whereas the other two model specifications, M2 and M3, estimate interaction terms. Model fit is acceptable with significant chi-square values ($p < 0.001$) and R^2 values ranging from 0.16 to 0.26 for all specifications. Interpretation of the results follows.

The determinants of contract customization and relational governance

We first examine whether increases in hazard levels are accompanied by an increase in the level of contract customization (Hypothesis 1) and relational governance (Hypothesis 2). The results show some support for Hypothesis 1 and weak support for Hypothesis 2. Consistent with Hypothesis 1, managers appear to craft more customized contracts as asset specificity increases (see Equation 2: M3, $p < 0.05$).[5] The effects of technological change and measurement difficulty on contractual complexity are more complex. While the two main effects and interaction terms are significant, their signs are not consistent with Hypothesis 1. Consistent with Hypothesis 1, measurement difficulty has a significant and positive effect on contract customization. Technological change, however, has a significant and negative effect on contract customization. Furthermore, the interaction of technological change and measurement difficulty has a significant and negative effect on contract customization. This result suggests that managers may lose confidence in contracts, as hazards become particularly severe (through their interaction).

For relational governance (Hypothesis 2), we find that greater levels of relational norms accompany exchanges with greater technological change ($p < 0.01$). The effect of asset specificity on relational governance is more complex. While the main effect is not significant (see Equation 1: M1), once an interaction term with technological change is added to the model, asset specificity now has a positive and significant effect on relational governance, and its interaction now has a positive and *negative* effect on relational governance (Equation 1: M2 and M3). This result suggests that relational governance has adaptive limits when faced with coordinating changes involving both specialized and technologically uncertain assets. Finally, we find that measurement difficulty is not associated with greater relational governance.

Finally, the instruments for contract complexity, tenure of the IS Director and the IS budget, are both significantly related to contract complexity. Similarly, the instrument for relational governance, the longevity of the relationship, is strongly significant.

The complementary relationship between contractual complexity and relational governance

The critical test of the relationship, as complements or substitutes between relational governance and contractual complexity, hinges on the sign and significance of coefficients for relational governance and contractual complexity in the first two equations. Negative coefficients in Equations 1 and 2 for relational governance and contract complexity, respectively, would support a substitute relationship between relational governance and contractual complexity. Positive coefficients suggest a complementary relationship in which greater relational governance predicts greater contractual complexity and greater contractual complexity predicts greater relational governance. Consistent with our hypothesis of a complementary relationship and inconsistent with the substitution hypotheses (Hypothesis 3a and b), we find that increases in the level of relational governance are associated with greater levels of contractual complexity (Hypothesis 4b, see Equation 2) and that increases in the level of contractual complexity are associated with greater levels of relational governance (Hypothesis 4a, see Equation 1). These results are robust across all model specifications and suggest that managers

[5] Note that for M2 (Equation 2), which specifies both interaction terms, the effect of asset specificity on contract customization is not significant. Yet for M3 (Equation 2), which drops the insignificant interaction term containing asset specificity and technological change, the parameter estimate for asset specificity on contract customization is significant. We suggest that asset specificity * technological change captures some of the same variance as the main effect, and this accounts for the above results.

Table 2. Assessing the determinants and complementarity of relational governance and contracts

Labels	Determinants of relational governance			Determinants of contractual complexity			Determinants of performance		
	Equation 1			Equation 2			Equation 3		
	M1	M2	M3	M1	M2	M3	M1	M2	M3
Contract	0.742**	0.666**	0.665**				0.675***	0.623***	0.616***
	(0.328)	(0.304)	(0.304)				(0.256)	(0.237)	(0.234)
Relational Governance				0.083*	0.103**	0.096**	0.256***	0.230**	0.241***
				(0.055)	(0.057)	(0.052)	(0.096)	(0.098)	(0.089)
Asset Specificity	−0.020	0.407**	0.386**	0.075**	0.051	0.074**	−0.259***	−0.222*	−0.254***
	(0.088)	(0.185)	(0.172)	(0.035)	(0.085)	(0.034)	(0.063)	(0.136)	(0.060)
Technological Change	0.165**	0.943***	0.916***	−0.065	−0.487***	−0.459***	−0.012	0.553**	0.509**
	(0.100)	(0.345)	(0.334)	(0.044)	(0.161)	(0.127)	(0.074)	(0.276)	(0.218)
Measurement Difficulty	−0.128	−0.507	−0.509	−0.024	0.563***	0.563***	−0.031	−0.817*	−0.814**
	(0.167)	(0.438)	(0.438)	(0.074)	(0.193)	(0.193)	(0.119)	(0.231)	(0.320)
Measurement Difficulty × Technological Change		0.047	0.047		−0.081***	−0.081***		0.108***	0.108***
		(0.058)	(0.058)		(0.025)	(0.025)		(0.042)	(0.041)
Asset Specificity × Technological Change		−0.060**	−0.057***		0.003			−0.005	
		(0.023)	(0.021)		(0.011)			(0.018)	
Longevity of Relationship	0.891***	0.850***	0.858***						
	(0.124)	(0.123)	(0.121)						
Tenure				0.034***	0.035***	0.035***			
				(0.011)	(0.011)	(0.010)			
Budget				0.359***	0.381***	0.383***			
				(0.061)	(0.062)	(0.061)			
Manu	−0.543	−0.539	−0.547	−0.830***	−0.793***	−0.795***	−0.141	−0.236	−0.240
	(0.580)	(0.561)	(0.561)	(0.244)	(0.241)	(0.240)	(0.403)	(0.389)	(0.388)
Insur	−1.526*	−1.453**	−1.460**	0.061	0.032	0.027	−1.385***	−1.352***	−1.344***
	(0.674)	(0.655)	(0.654)	(0.301)	(0.298)	(0.297)	(0.482)	(0.468)	(0.465)
Banking	−0.884	−0.792	−0.802	−0.824*	−0.973**	−0.976**	−0.844	−0.698	−0.701
	(0.956)	(0.944)	(0.944)	(0.410)	(0.408)	(0.407)	(0.663)	(0.654)	(0.651)
Constant	6.810***	1.672	1.826	−4.090***	−1.644	−1.772	8.621***	5.002***	5.182***
	(1.384)	(2.723)	(2.679)	(1.083)	(1.323)	(1.251)	(1.281)	(1.925)	(1.784)
N	285	285	285	285	285	285	285	285	285
χ^2	75.06	85.51	85.57	98.73	111.45	111.76	47.51	54.38	54.81
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
R^2	0.16	0.19	0.19	0.24	0.19	0.26	0.16	0.19	0.20

Note: LSE (S.E.). One-tail t-test for hypothesized effects. *$p < 0.10$; **$p < 0.05$; ***$p < 0.01$

may complement their use of one governance tool with the other.

The effect of complements on exchange performance

We next examine the effects of the complementary relationship of relational governance and contractual complexity on exchange performance. Our system of equations takes into account the complementary relationship between the two governance forms and indicates that both relational governance and contractual complexity deliver higher levels of satisfaction with exchange performance ($p \leq 0.01$ for each governance type). Given these positive effects of relational governance and contract complexity on performance, and the positive effects that relational governance and contract complexity appear to have on one another, our system of equations confirms a complementary relationship with performance (Hypothesis 4c). Relational governance and contractual complexity appear to function as complements in influencing satisfaction with exchange performance.

Interpretation of our coefficients (see our base model, M1) shows that a one standard deviation change in contract complexity changes relational governance by 0.33 of a standard deviation; whereas, a one standard deviation change in relational governance changes contractual complexity by 0.18 of a standard deviation. We further calculate the impact of these two governance models on performance. We find that a one standard deviation change in relational governance changes exchange performance by 0.35 of a standard deviation, and a one standard deviation change in contract changes exchange performance by 0.42 of a standard deviation.

DISCUSSION AND CONCLUSION

Relational governance and contracts function as complements

In the field of strategic management, most empirical and theoretical work on relational governance couches it as a self-enforcing mechanism. Within this tradition some ignore the role of formal contracts (Mohr and Spekman, 1994; Saxton, 1997), while others view formal contracts as a more costly substitute for relational governance (Gulati, 1995b; Uzzi, 1997; Dyer and Singh, 1998). Still others argue more strongly that the combined use of relational governance and formal contracts is fundamentally problematic, since formal controls signal distrust and relational governance is based on trust (Macaulay, 1963; Ghoshal and Moran, 1996; Bernheim and Whinston, 1998). Contrary to this substitution position, our data are consistent with a conclusion that contracts and relational governance function as complements. At a minimum, these results suggest a need to explore more carefully and predict more cautiously the relationship between formal contracts and relational governance.

Consistent with the notion of complements, our results show that managers tend to employ greater levels of relational norms as their contracts become increasingly customized, and to employ greater contractual complexity as they develop greater levels of relational governance. We suggest that customized contracts narrow the domain around which parties can be opportunistic. Customized contracts specify contingencies, adaptive processes, and controls likely to mitigate opportunistic behavior and thereby support relational governance. However, customized contracts do not guarantee the intent of mutuality, bilateralism, and continuance when conflict arises. Relational governance complements such adaptive limits of contracts by fostering continuance of the exchange and entrusting both parties with mutually agreeable outcomes.

Our results also suggest that contractual complexity and relational governance function as complements in explaining satisfaction with exchange performance. The system of three equations suggests that relational governance and contract customization both directly and indirectly increase exchange performance as measured by satisfaction with the cost, quality, and responsiveness of the outsourced service. Contract complexity indirectly increases exchange performance by increasing relational governance, which in turn increases exchange performance. Similarly, greater relational governance appears to positively affect contractual complexity, which in turn increases exchange performance. Evidence of these indirect effects supports the predicted complementary relationship. Note, however, that our performance measure generally ignores the costs associated with increasing the complexity of contracts and developing relational norms, which is necessary to thoroughly test the substitution argument.

The determinants of relational governance and customized contracts

We advanced that familiarity, based on years of personal relationships, is necessary to develop relationally governed exchanges. We infer that over time parties develop, test, observe, and confirm the existence of trust and the other requisite norms for cooperative relationship, and empirically confirm that parties with such a social history increasingly rely on relational norms to govern their exchange. This result is consistent with both social theorists (Granovetter, 1985, 1992; Gulati, 1995a, 1995b; Uzzi, 1997), and legal scholars (Macneil, 1978, 1980).

Our results are less consistent on whether managers select relational governance in response to exchange hazards. For the exchange hazard of asset specificity, our results are complex and not wholly consistent with the transaction cost logic. Managers do not appear to select relational governance in response to increasing levels of specialized assets; yet, to the contrary, when the model specifies the interaction of specialized assets and technological change, asset specificity now leads to greater levels of relational governance. The sign on this interaction term, however, is negative, and suggests a declining relational governance capability for such complex exchanges. Interestingly, we find that technological change prompts greater levels of relational governance. Managers appear to use relational governance to encourage continuance amidst the rapidly changing IS technology. This result is also broadly consistent with the Crocker and Masten (1991) finding that firms adopt relational contracts when uncertainty is high. It is also consistent with theory: relational norms are necessary to facilitate adjustments to highly consequential disturbances, which are likely to occur with high levels of technological change (Macneil, 1978; Williamson, 1991).

Consistent with the transaction cost logic, our results confirm that asset specificity generates greater levels of contractual complexity. Because specialized assets have no value in alternative uses, if an exchange relationship is prematurely terminated, managers are not likely to have recouped their investment. Through contractual complexity, managers specify penalties for early termination, and this formal record facilitates, if need be, the court 'picking up the pieces' and resolving termination issues (Macneil, 1978). This result confirms the nontriviality of specialized assets and its importance in the governance decision. We further find, however, that information services that are associated with difficult performance measurement and technological change are less likely to use customized contracts; that technological change decreases the use of customized contracts; and that difficult performance measurement increases the use of customized contracts. Finally, our results confirm that both the tenure of the IS director and the magnitude of the IS budget are associated with increased contractual complexity.

Overall, these results suggest that relational governance and contractual complexity have unique origins, and such a finding confirms the complementarity between the governance forms, rather than their substitution. If they both had common origins, then they would likely deliver common functionality; and hence function as substitutes. Yet, our results suggest their distinct origins and thus roles in promoting exchange performance.

Limitations and extensions

This study has important limitations that imply caution in generalizing the findings. First, the broader institutions of nations and their legal systems are likely to alter the effectiveness of formal contracts as governance devices. Countries without an enforceable system of property rights cannot rely on contracts to enforce expectations and promises (North and Weingast, 1989). Thus, our notion of complements is not likely to generalize to countries that lack a cultural and legal commitment to the use of formal contracts.

Second, the institutional environment in which these exchanges are embedded may be evolving. At the time of this study, many outsourced relationships in IS were considered to be in relatively early stages of development and consequently the institutional 'rules of the game' that support trust and other informal mechanisms may not have emerged (McFarlan and Nolan, 1995; Lacity *et al.*, 1995, 1996). The importance of contracts may thus decline with time, as trust emerges in an exchange. Thus, contracts may perform a critical role in the early stages of an exchange, but thereafter decrease in significance as patterns of cooperative behavior and reputation emerge. We advance that the theoretical mechanisms that

drive a complementary relationship between relational governance and contractual complexity are dynamic in nature. To fully test the dynamics of this complementarity, we would examine exchange relationships over time, noting the evolving nature of the institutions that embed these relationships and the pathways they pursue in seeking high performance (see, for example, Poppo and Lacity, 2002). Our cross-sectional sample design clearly constrains our capacity to carefully and fully examine the nature of the complementary relationship that we observe. Thus longitudinal data or experimental methods are needed to fully test the dynamics of this complex relationship (Lazzarini, Miller, and Zenger, 2002).

Third, our study is also limited by an inability to distinguish between economic and sociological explanations for relational governance. Disentangling sociologists' more emotive, and backward-looking concept of trust from economists' more calculative, forward-looking concept remains an important and presently unresolved empirical question. Equally important, our empirical specification of contract customization is limited. We did not measure, for example, the types of clauses that managers used in their contract. Certainly, more detailed and expansive measures would improve model specification, and the reliability and validity of an empirical study. Finally, our empirical study fails to measure a central aspect of the substitution argument: the costs of customizing contracts and using contracts to adapt to disturbances far exceed those of building and using relational norms for adjustments. Future work needs to capture and disentangle the underlying costs of such governance structures.

In sum, our study is the first to empirically explore a complementary relationship between relational governance and formal contracts. Our arguments and empirical conclusion depart sharply from most current work in strategic management, which highlights relational governance and trust as a substitute for contracts. Further work is clearly needed to explore the relationship among the features of governance that support interorganizational relations. In particular, we see a need to explore the relationship between relational governance and formal contracts over the life of an exchange relationship, and to develop more precise measures of contractual clauses and of the underlying costs of these governance structures.

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