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THE DYNAMIC INTERPLAY OF CONTRACTS AND TRUST: UNTANGLING BETWEEN- AND WITHIN-DYAD EFFECTS

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INTRODUCTION

Contracts and trust are two prominent governance mechanisms for interfirm exchanges, yet controversy persists regarding their interplay. One side argues that trust and contracts are substitutive, such that one supplants the need for the other or even renders it counterproductive (Malhotra and Murnighan, 2002). In contrast, a complementarity view asserts that these two mechanisms function to support and reinforce each other (Mayer and Argyres, 2004; Poppo and Zenger, 2002).

To address this controversy, one stream of research outlines some relevant contingencies, including exchange-, market-, and institutional-level characteristics (e.g., Abdi and Aulakh, 2017; Schilke and Cook, 2015; Zhou and Poppo, 2010). Another attempt to address the controversy highlights the complexity of both constructs, in studies that differentiate either the distinct functions and nature of contracts (Faems *et al.*, 2008; Lumineau, 2017; Ryall and Sampson, 2009; Weber and Mayer, 2011; Woolthuis, 2005), or between competence- and identity-based trust (McKnight, Cummings, and Chervany, 1998; Woolthuis, 2005).

Across these rich streams, extant literature suffers two major limitations. First, prior studies fail to tease out the between-dyad effect from the within-dyad effect (Majchrzak, Jarvenpaa, and Bagherzadeh, 2015). A *between-dyad effect* refers to time-invariant relationships between trust and contracts across dyads at a fixed time; the *within-dyad effect* estimates time-dependent relationships by which trust (contracts) affects changes in contracts (trust) in a dyad over time (Certo, Withers, and Semadeni, 2017; Curran and Bauer, 2011). However, existing studies tend to mix the two conceptually and fail to distinguish them empirically, leading to incompatible arguments and conflicting findings (Certo *et al.*, 2017). Moreover, most prior studies rely on cross-sectional data, which can only capture between-dyad variance (Cao and Lumineau, 2015).

In response, we seek to untangle the complexity of the contract–trust interaction by examining between- and within-dyad effects. Between buyer–supplier dyads, we expect contracts and trust to complement each other, reflecting varying levels of exchange complexity and deliberate contracting efforts across dyads. In contrast, within these dyads, we predict that contracts and trust substitute for each other over time, as a result of partner-specific learning and the emergence of routines. To validate these arguments, we consider two moderators: exchange product customization and prior exchange history (Hegde *et al.*, 2005; Poppo, Zhou, and Ryu, 2008). By increasing coordination complexity, product customization might negatively moderate the positive between-dyad effects of trust and contracts. Because prior exchange history represents the shadow of the past and enhances partners' understanding of the exchange partners, it should prompt an effect by which high trust (contracts) leads to a greater reduction in the use of contracts (trust), such that the within-dyad substitution effect becomes more salient. The

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results, based on survey data from 250 buyer–supplier relationships collected over two time periods, provide strong support for the propositions and thereby establish a more refined understanding of the dynamic contract–trust relationship.

Economic and social views on interfirm governance

According to transaction cost economics (TCE), firms design contracts to safeguard and coordinate their exchanges when potential opportunistic behavior and conflict threaten the realization of mutual gains (Williamson, 1985). *Contracts* are written agreements that are specified to regulate exchanges (Abdi and Aulakh, 2017; Krishnan, Geyskens, and Steenkamp, 2016). By specifying each party's rights and responsibilities, contracts safeguard the transactions, provide adaptation rules and procedures, and coordinate partner behaviors (Mooi and Ghosh, 2010). The more detailed the contracts, the better the protection that exchange parties obtain (Geyskens, Steenkamp, and Kumar, 2006).

However, drafting contracts is a non-trivial undertaking (Mooi and Ghosh, 2010). Regardless of their level of detail, contracts are inherently incomplete and limited in their ability to address unpredictable external changes, which may create rigidity and potential maladaptation (Carson, Madhok, and Wu, 2006; Griffith and Zhao, 2015). Contracts also can prompt negative psychological interpretations of partner behavior, which may harm relationship development over time (Malhotra and Murnighan 2002; Weber and Mayer 2011).

Relational exchange theory (RET) instead suggests that interfirm relationships always entail some relational and social forms of trust (Zaheer and Venkatraman, 1995). *Trust* indicates the "psychological state of an exchange relationship comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior" (Rousseau and Burt 1998: 395). Unlike contracts that seek to control hazards directly, trust implies an acceptance of risk based on beliefs about the sincere intentions of the partner (Becerra, Lunnan, and Huemer, 2008; Das and Teng, 1998; McEvily, Perrone, and Zaheer, 2003). And trust reduces friction and facilitates coordination in interfirm exchanges (Lavie, Haunschild, and Khanna, 2012; Mellewigt *et al.,* 2017).

Although rooted in historical engagements, trust does not automatically increase over time (Lioukas and Reuer, 2015; Vanneste, Puranam, and Kretschmer, 2014). Trust building is a conscious, planned activity that demands considerable resources from organizations (Madhok, 2006). Moreover, high trust can induce three notable dysfunctional mechanisms, including reduced monitoring and vigilance (Villena, Revilla, and Choi, 2011), collective blindness (Villena *et al.*, 2011; Zhou *et al.*, 2014), and overembeddedness (Holloway and Parmigiani, 2016; Lazzarini, Miller, and Zenger, 2008).

Contract–trust relationships

The extant literature offers conflicting views regarding the contract-trust relationship. Among research that predicts that contracts and trust are substitutes, a TCE foundation is prevalent, with the assumption that opportunism is a basic behavior of all economic agents, therefore detailed contracts are needed to curb their potential opportunistic behaviors (Lado, Dant, and Takleab, 2008). This emphasis on contracts can engender a self-fulfilling prophesy by signaling distrust, which hampers any formation of and maintenance of trust (Ghoshal and Moran, 1996; Madhok, 2006). In contrast, if firms rely on trust, they believe that others will

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perform in the mutual interest of the partnership, even in the absence of control (Das and Teng, 2001). Such partners may be reluctant to monitor each other, so contracting appears inappropriate (Molina-Morales and Martinez-Fernandez, 2009).

The complementarity view instead posits that contracts and trust reinforce each other, such that trust can be initiated and maintained by contracts. The process of developing complex contracts evokes shared sensemaking among the exchange partners (Vlaar, Van den Bosch, and Volberda, 2006), increases mutual understanding, and infuses the partnership with relational norms (Abdi and Aulakh, 2017). Because contracts are costly, relationship-specific investments, they represent a tangible commitment that encourages trust (Zhou and Poppo, 2010). Furthermore, the presence of trust facilitates more detailed contracts, which could increase their complexity and specificity (Woolthuis, 2005).

Between-dyad versus within-dyad effects

In interfirm exchanges, the between- and within-dyad effects jointly determine the contract–trust relationship. The between-dyad effect pertains to the comparison between *different buyer–supplier dyads* at a *fixed time* point (t = 0), such that it reflects the *structural* traits of the dyadic relationship compared with other dyadic relationships. The within-dyad effect involves a comparison across different states of the *same dyad*, emphasizing the *ongoing process* within that particular structure *over time* (Janowicz-Panjaitan and Noorderhaven, 2009). In this sense, we argue that the between-dyad effect points to the influence of contracts (trust) on trust (contracts) for designing the general conditions, parameters, and systems of collaboration, which differ across dyads; the within-dyad effect instead highlights accumulative changes in trust (contracts), in response to the use of contracts (trust), during ongoing operations that evolve over time within a particular dyad. Analytically, we denote the repeated measure of trust (contracts) at time t for a buyer–supplier dyad i as y_{ti}. In a linear growth model, this repeated measure can be expressed as a simple linear function of time, $\boldsymbol{y_{ti}} = \beta_{0i} + \beta_{1i}\, \boldsymbol{t},$ where β_{0i} and β_{1i} represent the intercept and linear slope for the individual dyad i. Therefore, the interrelation of contracts and trust takes effect both at the initial level (β_{0i}) and through changes over time (β_{1i}).

HYPOTHESES

In between-dyad settings, transacting partners with higher levels of trust likely initiate exchanges that feature more detailed contracts. A trusting relationship enables more entrepreneurship and value creation, which can produce complex, risky initiatives (Madhok, 2006; Valtakoski, 2015). Trusting parties make a “leap of faith” to accept vulnerability, which creates interaction opportunities that otherwise might not exist (Bachmann, 2001; Valtakoski, 2015). For example, due to their confidence in each other, trusting parties might work on more strategically important deals with greater value (Lazzarini *et al.*, 2008) that relate closely to the firms’ core business, which implies their greater exposure to potential disruption and risk (Barthélemy and Quélin, 2006). To reduce this risk, exchange partners draft more complex contracts to define objectives, assign tasks and responsibilities, describe project schedules and milestones, and address the consequences and procedures for handling possible breaches or termination (Reuer and Ariño, 2007; Zhou *et al.*, 2008).

In parallel, exchanges with detailed contracts tend to involve more interactions and communication than those established with simple contracts (Janowicz-Panjaitan and

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Noorderhaven, 2009). To devise detailed contracts, partners must engage in deliberate, purposeful contracting activities. As Williamson (1999) stresses, credible contracting demands farsighted contracting, such that the parties look ahead, recognize hazards, and devise mitigating responses. This costly, resource-consuming process signals partner commitment (Zhou and Poppo, 2010) and helps establish shared understanding, along with a detailed plan for collaborative activities (Lumineau, 2017). Detailed contracts also can establish complex, formal patterns of interfirm interactions that permit information exchange and opportunities for partners to understand each other better, which should invoke greater trust (Poppo and Zenger, 2002).

> *Hypothesis 1: In comparisons across buyer–supplier dyads, (a) higher levels of trust are associated with higher levels of contracts, and (b) higher levels of contracts are associated with higher levels of trust.*

Within a particular dyad, trust and contracts may affect the use and application of the other. Exchange partners learn and develop a set of interorganizational routines over time (Zheng and Yang, 2015). Partner-specific routines reflect each firm's accumulation of experience with its partner, and in turn, they can support interactions and communication throughout a series of actions and activities (Zollo, Reuer, and Singh, 2002). If the relationship is governed by detailed contracts, formal partner-specific routines likely emerge, such that the partners rely on formal routines and standard interfaces to gather information, mitigate disputes, and resolve problems (Li, Poppo, and Zhou, 2010). As the relationship persists, it becomes increasingly efficient for both parties to collaborate and coordinate through their contractual routines (Zollo and Winter, 2002). Partners who are accustomed to such formal routines do not find it necessary to maintain high levels of trust, which would require substantial costs and a fundamentally different set of routines. Thus, the heavy use of contracts may reduce interfirm trust in the same dyad over time.

Similarly, a greater reliance on trust may decrease the use of contracts in ongoing relationships, because trust can encourage tacit learning and joint problem solving. In the face of challenges, trust functions as a heuristic that helps the exchange partners adapt efficiently and make quick decisions (Dyer and Singh, 1998). Accordingly, trust allows for informal routines and improvisational behaviors that would be difficult to articulate or explicitly document (Zheng and Yang, 2015). Previous studies accordingly demonstrate how trust facilitates tacit knowledge acquisition and transfer (Becerra *et al.*, 2008; Li *et al.*, 2010); these tacit, implicit, informal routines in turn tend to reduce the use of formal contracts in the relationship over time.

> *Hypothesis 2: Within a buyer–supplier dyad, (a) high levels of trust lead to a reduction in contracts over time, and (b) high levels of contracts lead to a reduction in trust over time.*

Moderating role of product customization

Relative to standardized products, customization seeks a better fit between the buyer's needs and the supplier's offerings, to generate more customer value and satisfaction (Hegde *et al.*, 2005; Stump *et al.*, 2002). Customization typically involves an identification of customer needs and modifications of existing products to satisfy those idiosyncratic needs (Hegde *et al.*, 2005). Because customization limits the relevant suppliers available to the buyer, it can increase task uncertainty, coordination difficulty, and the potential for supply chain disruption (Ellis, Henry, and Shockley, 2010*;* Fan *et al.,* 2016*)*. Therefore, greater product customization might weaken

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the positive between-dyad effects between trust and contracts. Moreover, product customization mitigates the effect of contracts for bolstering trust. When exchanges are featured by high customization, exchange partners already engage in intensive interactions and information sharing, so the benefits of contracts for promoting transaction-specific interactions decrease.

> *Hypothesis 3*: *Product customization negatively moderates the between-dyad effects of trust and contracts, such that when product customization is higher, both (a) the positive effect of trust (contracts) on contracts (trust) is weaker.*

Moderating role of prior exchange history

The *prior exchange history* refers to how long the parties have been doing business together, which encourages partner-specific learning (Lioukas and Reuer, 2015). As the dyadic relationship progresses, partners accumulate valuable knowledge about each other, such as their business strategies, organizational strengths and constraints, and management styles (Argyres, Bercovitz, and Mayer, 2007; Mellewigt *et al.,* 2017*;* Zollo *et al.*, 2002). These experiences pave the way for standardized practices and routines for collaboration; meanwhile, relationships with longer histories tend to be associated with greater structural inertia and poor adaptation to environmental changes (Hoisl, Gruber, and Conti, 2017). Accordingly, a long exchange history might intensify the substitution effect between trust and contracts over time. Within a dyad, partner-specific routines emerge and develop from past learning and experience (Ring and Van De Ven, 1994). More detailed contracts can substitute for trust, through their encouragement of formal routines and rules, but a heavy reliance on trust reduces the use of contracts, because it encourages tacit, informal routines. In a long-standing relationship, the strong routines offer enhanced reliability, predictability, and controllability (Hoisl *et al.*, 2017), and the exchange partners have confidence in the specific governance mechanism they use, which inhibits the use of the other mechanism.

> *Hypothesis 4*: *Prior exchange history negatively moderates the within-dyad effects of contracts and trust, such that when this history is long, high levels of trust (contracts) lead to a greater reduction in contracts (trust).*

METHODOLOGY

The empirical setting spans buyer–supplier relationships among Chinese manufacturing firms. Because the buyer conventionally initiates transactions, we take a buyer perspective to assess these dyadic relationships (Poppo, Zhou, and Li, 2016). We followed the guidelines of Gerbing and Anderson (1988) to develop the survey instruments. To increase the response rates of our survey, we cooperated with a market research firm to conduct on-site interviews. We collected data at two points in time. The final sample consists 250 usable responses. We made sure that non-response bias accordingly is not a major concern for both the Time 1 and Time 2 survey.

We adapted the measures from prior literature. Trust and contracts were measured using multiple items with 1-7 Likert scale, and exchange history and product customization were measured with one item. Furthermore, we controlled for important factors at the levels of the

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firm, dyad, and industry. To validate the measures, we conducted a confirmatory factor analysis of the latent constructs. All the measures demonstrated satisfactory psychometric properties.

We employed two-level hierarchical linear modeling (HLM) with repeated measures to test the influence of contracts (trust) on trust (contracts) over time. First, we ran the unconditional mean model and the unconditional growth model (Singer and Willett, 2009). They show that in our sample, (1) an estimated 89.9 percent of the total variance in contracts and 90.1 percent of the total variance in trust resided within dyads; and (2) approximately 37.1 percent of the within-dyad variance in contracts is associated with linear time, whereas 26.2 percent of the within-dyad variance in trust is associated with linear time. Then, we used models with intercepts and slopes as outcomes, which can explain the initial level (i.e., between-dyad effect) of trust/contracts and their growth over time (i.e., within-dyad effect) (Dean *et al.*, 2016). The independent variables were mean-centered to enhance interpretability.

FINDINGS AND DISCUSSION

This study investigates the dynamic interplay of contracts and trust in buyer–supplier relationships, using a sample of 250 dyads in China over two time periods. We find that, when compared across different dyads, contracts and trust are complementary (between-dyad effect); within a dyad, they substitute for each other over time (within-dyad effect). Moreover, product customization weakens the between-dyad complementary effect, and prior exchange history makes the within-dyad substitution more salient.

Our study contributes to the existing literature in three primary ways. First, this study advances current research on the contract–trust relationship by explicitly considering the dynamic nature of interfirm exchanges (Majchrzak *et al.*, 2015; Palmatier *et al.*, 2013). Second, we reconcile an ongoing debate by untangling the between- versus within-dyad effects for contracts and trust. Theoretically, the between-dyad effect captures the structural aspect of different dyads, while the within-dyad effect pertains to processes within a single structure. Regarding their comparative strength, our results suggest that the within-dyad effect assumes a much larger proportion of variance than the between-dyad effect, which demonstrates the importance of examining the dynamic component of contract–trust relationships (Singer and Willett, 2009). In terms of their nature, the between-dyad effects pertain to a complementary relationship and the within-dyad effects reveal a substitutive relationship between trust and contracts. Accordingly, our findings suggest the coexistence of substitution and complementarity (Certo *et al.*, 2017). Third, we show that exchange characteristics (i.e., product customization and prior exchange history) moderate the relationships between contracts and trust.

REFERENCES AVAILABLE FROM THE AUTHORS