

SOURCES OF ALLIANCE PARTNER TRUSTWORTHINESS: INTEGRATING CALCULATIVE AND RELATIONAL PERSPECTIVES

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Research on the sources of organizational trustworthiness remains bifurcated. Some scholars have adopted a calculative perspective, stressing the primacy of actors' rational calculations, while others have approached trustworthiness from a relational perspective, focusing on its social underpinnings. We help to reconcile these seemingly disparate views by adopting an integrative approach that allows us to clarify the boundaries of both perspectives. Based on dyadic survey data from 171 strategic alliances, we find that the calculative perspective (represented by contractual safeguards) has higher predictive power when the partner lacks a favorable reputation. In contrast, the relational perspective (represented by organizational culture) predicts trustworthiness more strongly when familiarity with the partner organization is high. Copyright © 2013 John Wiley & Sons, Ltd.

INTRODUCTION

While scholarly interest in the role of trustworthiness in an organizational context has proliferated substantially in recent years (Fulmer and Gelfand, 2012; Zaheer and Harris, 2006), the literature has remained fragmented (McEvily, Perrone, and Zaheer, 2003). In particular, two distinct perspectives on the sources of trustworthiness have been distinguished, a calculative and a relational account (Kramer, 1999). Whereas proponents of the calculative view tend to adopt an economic frame and consider trustworthiness to be based on rational calculations, the relational perspective is anchored in sociological and psychological

thinking and gives primacy to the social underpinnings of trustworthiness.

While the calculative and the relational research programs derive from different assumptions, integration of ideas from both perspectives is important (cf. Kramer, 1999; McEvily and Zaheer, 2006) because, as we will argue, each perspective alone provides only a partial account of the underlying basis of trustworthiness. Moreover, existing empirical studies do not allow for a direct comparison of the predictive power of these respective perspectives or for determination of the specific conditions under which the factors identified as most relevant in each perspective apply.

This study helps to integrate the calculative and relational perspectives on trustworthiness and investigates relevant contextual circumstances that determine their scope. First, we identify specific antecedents to trustworthiness representative of each perspective. Then, we develop hypotheses regarding the conditions that determine which of the two perspectives has stronger predictive

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power. A key contribution of our study is to establish the relative importance of the calculative and the relational perspectives to trustworthiness under different conditions. Identifying such boundary conditions is an essential theoretical tool for reconciling conflicting approaches (Gray and Cooper, 2010) and for increasing conceptual precision (Leavitt, Mitchell, and Peterson, 2010; Peteraf, Di Stefano, and Verona, forthcoming). Our ultimate goal, therefore, is the development of a more generalizable theory of context that would help explain the conditions under which different antecedents of trustworthiness are more or less relevant (McEvily, 2011; McEvily and Tortoriello, 2011; Zaheer and Harris, 2006).

We chose strategic alliances as the research setting to empirically test our integrative theoretical model. Strategic alliances can be defined as interorganizational relationships that allow otherwise independent firms to share a variety of resources (Anand and Khanna, 2000). Because trustworthiness is a particularly important issue in relationships characterized by high uncertainty, interdependence, and threats of opportunism (Deakin and Wilkinson, 1998; Rousseau *et al.*, 1998), strategic alliances—in which these characteristics are typically very salient (Leiblein, 2003)—provide an ideal context for this study. Specifically, we analyze current rather than prospective alliances and thus focus on trustworthiness perceptions in ongoing relationships rather than on preexisting trustworthiness prior to alliance formation.

CONCEPTUAL BACKGROUND AND HYPOTHESES

Trust and trustworthiness have become key concepts in research on exchange relationships (Cook and Schilke, 2010; Hardin, 2002). While scholars have used the term *trust* broadly to denote a wide variety of issues, including dispositional traits, mutual orientation, and actual behavior, the concept of *trustworthiness* (that we focus on in this article) is more specific and thus less ambiguous in that it refers to perceived characteristics of a trustee (Cook, Hardin, and Levi, 2005; McEvily and Tortoriello, 2011). An exchange partner who is trustworthy is one that will not exploit the other's exchange vulnerabilities (Mayer, Davis, and Schoorman, 1995). Three factors have been

proposed to constitute relevant first-order dimensions of trustworthiness: the trustee's perceived ability, benevolence, and integrity (Mayer *et al.*, 1995). This three-dimensional model is sometimes referred to as the ABI-framework (Pirson and Malhotra, 2011), and it has become the dominant model for conceptualizing trustworthiness in organizational research (McEvily and Tortoriello, 2011). Ability refers to the trustor's perception that the trustee can accomplish the specific task at hand effectively. Benevolence refers to the trustor's perception that the trustee cares for him or her and has his or her best interests at heart. Integrity refers to the trustor's perception that the trustee is committed to an acceptable set of principles. In this conceptualization, trustworthiness may refer not only to persons, but also to collective actors or firms (Schilke and Cook, 2013; Schoorman, Mayer, and Davis, 2007). Thus, the conceptualization is applicable in the context of strategic alliances where trustworthiness pertains to a specific partner firm.

What makes the concept particularly appealing for strategy research is that trustworthiness has the potential to be a source of competitive advantage (Barney and Hansen, 1994; Dyer and Singh, 1998). Trustworthiness varies between firms because it typically results from unique historical conditions and is socially complex (Tyler, 2001). In addition, trustworthiness may lead to lower transaction costs (Dyer and Chu, 2003) and enhanced learning (Becerra, Lunnan, and Huemer, 2008; Li, Poppo, and Zhou, 2010; Szulanski, Cappetta, and Jensen, 2004), suggesting a positive relationship between trustworthiness and performance outcomes (Dyer and Singh, 1998). Thus, Barney and Hansen (1994) consider trustworthiness to be an important source of competitive advantage.

Antecedents to trustworthiness

Given the significance of the trustworthiness concept in strategic management, it becomes important to understand the intricacies of the sources of trustworthiness. While the beneficial consequences of trustworthiness are well accepted in the literature, there is less agreement on how trustworthiness develops (cf. Becerra and Gupta, 2003; Poppo, Zhou, and Ryu, 2008). Kramer (1999) observes two disparate positions in the literature regarding relevant sources of trustworthiness: the calculative and the relational perspectives. This calculative–relational dichotomy is now widely

acknowledged in the literature (e.g., Das and Teng, 2001; Gulati and Nickerson, 2008; McEvily and Zaheer, 2006; Saporito, Chen, and Sapienza, 2004; Zaheer and Harris, 2006; Zahra, Yavuz, and Ucbasaran, 2006) and can be considered an instance of the more general distinction between economic and behavioral perspectives in strategy research (Zajac, 1992).

Scholars following the *calculative* approach tend to focus on the instrumental motives that drive trustworthy behavior (e.g., Axelrod, 1985; Gambetta, 1988; Schelling, 1960). Actors are presumed to be motivated to make rational, efficient choices about trustworthy behavior in an effort to maximize expected gains and/or to minimize expected losses from their transactions. A conscious calculation of the advantages and disadvantages of behaving in a trustworthy manner drives these choices. Therefore, an actor will be perceived as trustworthy only if there are adequate grounds for believing that it would be in that party's economic interest to be trustworthy (Hardin, 1992), especially when negative sanctions in the case of defection outweigh the potential benefits of opportunistic behavior (Lane, 1998). Other major reasons for perceiving someone as trustworthy are typically rejected or considered to be exceptions by researchers who adopt the calculative approach (Bromiley and Harris, 2006), making expected punishment the primary "motivator" for calculus-based trustworthiness (Lewicki and Bunker, 1996).

Scholars adopting a *relational* perspective, on the other hand, tend to focus more on social and attitudinal underpinnings of trustworthiness (e.g., Mayer *et al.*, 1995; McAllister, 1995; Tyler and Kramer, 1996). In this view, trustworthiness is based on a social orientation, and identity and values are seen as important drivers of trustworthiness (Kramer, Brewer, and Hanna, 1996; Tyler and DeGoey, 1996). The exchange partner's normative or cognitive commitment to institutionalized rules and ways of behaving are considered key to explaining trustworthy behavior (Beckert, 2009). A common feature of research in this tradition is an emphasis on social rather than instrumental motives that drive trustworthiness, including consideration of how actors' self-presentational concerns and identity-related needs and motives influence trustworthy behavior. It is important to note that Kramer's (1999) conceptualization of the term "relational" deviates from the more narrow usage of the term in studies such as Dyer

and Singh (1998) or Poppo *et al.* (2008), which tend to equate the term "relational" with a dyad-level unit of analysis. We adopt Kramer's use of the term in this study. His conceptualization includes, but is not restricted to the dyad level. Most notably, the trustee's values constitute an important organizational—as opposed to dyad-level—antecedent to trustworthiness in Kramer's (1999) framework.

We agree with Lane (1998) and Kramer (1999) who argue for the importance of reconciling these views concerning the antecedents to trustworthiness. Rather than seeing calculative and relational factors as incompatible, Kramer (1999) calls for research that would develop a contextual account and simultaneously incorporate both economic considerations and social inputs in trustworthiness decisions. "In other words, what is needed is a conception of organizational trust that incorporates calculative processes as part of the fundamental arithmetic of trust, but that also articulates how social and situational factors influence the salience and relative weight afforded to various instrumental and non-instrumental concerns" (Kramer, 1999: 574). Similarly, McEvily and Tortoriello (2011: 41) advocate the development of "a generalizable theory of context that explains when and under which conditions different components of trust are more or less relevant."

Our study addresses the call for more inclusive as well as situation-dependent considerations of different sources of trustworthiness in the context of strategic alliances. Before turning our attention to contingency factors, we identify specific calculative and relational factors that are relevant sources of the trustworthiness of alliance partners. We selected *contractual safeguards* and *organizational culture* for two reasons. First, these factors have a particularly strong conceptual fit with the calculative and the relational approach, respectively. Contractual safeguards affect perceptions of trustworthiness based on calculative grounds, whereas relational values explain the mechanism through which organizational culture drives trustworthiness (as we discuss in greater detail below). Second, focusing on contractual safeguards and organizational culture is consistent with the influential theoretical framework of Barney and Hansen (1994), which differentiates between contractual governance mechanisms and values as key drivers of trustworthiness. It is also consistent with the work of Bacharach and

Gambetta (2001), which emphasizes the importance of governance norms and moral principles in judgments of trustworthiness. Taken together, we consider contractual safeguards and organizational culture to be specific representations of calculative and relational sources of trustworthiness in the context of strategic alliances.

Contractual safeguards

Barney and Hansen (1994) describe contracts that govern the interorganizational relationship as an important source of trustworthiness. Contractual safeguards define what constitutes opportunistic behavior and specify the consequences for offending parties (Malhotra and Lumineau, 2011; Parkhe, 1993; Reuer and Ariño, 2007); the trustee undertakes to cede something of value in the event of committing a breach of contract (Lumineau and Quélin, 2012). Comprehensive contractual safeguards make it economically beneficial for the trustee to behave in a trustworthy manner and thus provide an incentive structure that gives credibility to the trustee's commitments (Baker, Gibbons, and Murphy, 1994; Deakin and Wilkinson, 1998). In this way, contractual safeguards provide *ex ante* systems to ensure reciprocity and an obligatory framework to restrain private incentive seeking by the trustee (Lumineau and Malhotra, 2011; Poppo and Zenger, 2002). In his comprehensive treatment, Sitkin (1995) describes four general mechanisms through which legalistic structures, such as contractual safeguards, can foster trustworthiness perceptions: by reducing the risk involved in ascribing high trustworthiness, by channeling action toward trustworthy behavior, by encouraging learning during the process of putting the structures in place, and by promoting faith in trustworthy action beyond what can be explicitly monitored. As a result, contractual safeguards can elevate the trustor's perceptions of the alliance partner's trustworthiness.

Organizational culture

Moreover, Barney and Hansen (1994) argue that exchange parties may be trustworthy because opportunistic behavior would violate their values, principles, and internalized behavioral standards. At the firm level, the trustee's organizational culture—understood as the complex set of values, beliefs, assumptions, and symbols that

define the way a firm conducts its business (Barney, 1986)—represents such “principled” trustworthiness. The organizational culture serves as an expression to the firm's employees of how things are done and prioritized (Barney and Hansen, 1994). Importantly, cultural ideals tend to apply not only internally, but also to the relationships outside the organization (Adler, Goldoftas, and Levine, 1999; Dyer and Ouchi, 1993), underscoring the relevance of organizational culture to the ways in which employees deal with alliance partners (Beugelsdijk, Koen, and Noorderhaven, 2006). In line with the relational approach, it is thus argued that a partner firm can be viewed as trustworthy because of its internal organizing rules and values.

More specific predictions about the role of organizational culture as a source of trustworthiness require the identification of a particular type of organizational culture that is associated with trustworthy firms. Based on the qualitative findings of Dodgson (1993) and Larson (1992), high trustworthiness of alliance partners tends to be related to those organizational cultures that are receptive to external inputs, which is characteristic of a clan culture, one of the four types of organizational cultures proposed by Cameron and Freeman (1991). Focusing on clan culture is also consistent with McEvily *et al.* (2003: 92) who “view trust as most closely related to the clan organizing principle.” Clan culture refers to the degree to which an organization's underlying values and assumptions emphasize collective goals, participation, and teamwork (Cameron and Quinn, 1999). It promotes goal congruence and reduces the inclination of organizational members to behave opportunistically (Perrone, Zaheer, and McEvily, 2003). This implies that a clan culture encourages boundary spanners to harmonize the interests of both alliance partners and, thus, constitutes an important driver of a partner firm's trustworthiness (Perrone *et al.*, 2003).

We suggest that both contractual safeguards and clan culture have an important bearing on alliance interactions and affect perceptions of the trustworthiness of alliance partners. This leads us to the following two baseline hypotheses:

Hypothesis 1: The greater the extent of contractual safeguards, the greater the perceived trustworthiness of the alliance partner.

Hypothesis 2: The greater the prevalence of a clan culture within the partner firm, the greater the perceived trustworthiness of the alliance partner.

Contextualization

We have reason to believe, however, that these hypothesized relationships are not always equally strong. In particular, we propose that information asymmetries regarding the trustee's true qualities differ between settings and that such differences affect the relative importance of the proposed calculative and relational sources of trustworthiness. In certain settings, the trustor has relatively little relevant information about the true characteristics of the exchange partner (Barney and Hansen, 1994; Cook *et al.*, 2005; Sydow, 1998). In these situations, contractual protections are a particularly important means of assuring trustworthiness, whereas the lack of detailed knowledge of a partner firm's characteristics diminishes the effect of the cultural antecedent to trustworthiness. However, with decreasing information asymmetries, relational factors begin to outweigh costly calculative sources of trustworthiness as the trustor's confidence in the assessment of the trustee increases. In what follows, we apply this general line of thinking to examine two concrete mechanisms through which information asymmetries between alliance partners are alleviated: familiarity and reputation. We select these two contingencies because reputation is frequently mentioned as a relevant reducer of information asymmetries by researchers who emphasize calculative factors (e.g., Bolton and Ockenfels, 2009; Chen, 2000; Hill, 1990), while familiarity is viewed as central to the relational perspective (e.g., Child, 2001; Dekker and van den Abbeele, 2010; Luhmann, 1979).

Familiarity

Familiarity can be defined as the degree to which one party in an exchange relationship is knowledgeable of the characteristics of the other party. Familiarity is often based on previous communication, experience, and learning (Gefen, Karahanna, and Straub, 2003; Luhmann, 1979). It is well accepted that familiarity enables a firm to gain a deeper understanding of the alliance partner's procedures and ways of doing business

(Dekker and van den Abbeele, 2010; Sherwood and Covin, 2008; Zollo, Reuer, and Singh, 2002) and that it increases the degree to which the trustor is able to "read" the trustee (Carson *et al.*, 2003). The "social knowledge" that enables the trustor to understand general patterns of highly familiar trustees also allows the trustor to predict future trustee behavior (Larson, 1992; Poppo *et al.*, 2008; Tolbert, 1988).

In particular, familiarity should foster confidence in the trustor's assessment of the alliance partner's culture and its implications for trustworthiness. That is, familiarity makes culture-based inferences about future behavior more salient and reliable, and thus strengthens the link between clan culture and perceived trustworthiness. Conversely, when partner familiarity is low, trustworthiness cannot be adequately anchored to specific observed beliefs and procedures. The complex nature of an organization's culture makes it difficult to observe (Child, 2001), especially when relevant first-hand experience with the organization is lacking. Consequently, with low familiarity, firms may not be reasonably assured that cultural values of the alliance partner can credibly predict trustworthy behavior.

Based on the discussion above, we suggest that the degree of familiarity affects the absolute strength of the effect of clan culture on trustworthiness in that this effect is stronger when familiarity is high. In addition, we expect the degree of familiarity to also affect the relative influence of clan culture and contractual safeguards in such a way that the former outweighs the latter when familiarity is high. As suggested by Gulati (1995) and McKnight, Cummings, and Chervany (1998), trustworthiness beliefs based on cautious contracting among unfamiliar partners give way to trustworthiness perceptions that are based on cultural characteristics as partner firms become acquainted. Hence:

Hypothesis 3a: The relationship between clan culture and perceived trustworthiness is stronger when familiarity is high rather than low.

Hypothesis 3b: The relationship between clan culture and perceived trustworthiness is stronger than the relationship between contractual safeguards and trustworthiness when familiarity is high.

Reputation

A partner firm's reputation is an important signal reducing information asymmetries about its characteristics (Weigelt and Camerer, 1988). Reputation is defined as the firm's favorable standing in the community that is based on its recognized achievements (e.g., Deephouse and Carter, 2005; Radbourne, 2003). We posit that imposing contractual constraints will have a relatively less strong effect on perceived trustworthiness as the reputation of the partner increases. Since developing a favorable reputation involves a significant investment and represents a valuable asset (Afuah, 2013; Dasgupta, 1988; Hill, 1990; Scott and Walsham, 2005), it is rational for alliance partners with a good reputation to behave in a trustworthy manner even in the absence of detailed and extensive contractual safeguards. A trust breach is more costly for these firms, and that is why reputation reduces the demand for copious contracts to ensure exchange partner trustworthiness (Coleman, 1990; Cook *et al.*, 2005; Lewicki and Bunker, 1996). On the contrary, in constellations where the alliance partner lacks reputational assets, the need to rely on comprehensive contracts to ensure trustworthiness is higher (Hill, 1990). In these settings, detailed contractual safeguards will be a crucial instrument in specifying the trustworthiness of the alliance partner, and we expect contractual provisions to outweigh cultural perceptions as drivers of perceived trustworthiness. Therefore, we hypothesize:

Hypothesis 4a: The relationship between contractual safeguards and perceived trustworthiness is stronger when reputation is low rather than high.

Hypothesis 4b: The relationship between contractual safeguards and perceived trustworthiness is stronger than the relationship between clan culture and perceived trustworthiness when reputation is low.

METHOD

Sample and data collection

The nature of our hypotheses required gathering key informant data from two parties involved in an alliance—the trustee and the trustor. Such a

matched sample design also reduces the threat of common method bias, which would have been problematic had we collected both independent and dependent variables from the same source (Podsakoff *et al.*, 2003).

We chose strategic alliances in the area of research and development (R&D) as the empirical setting because the number of such R&D alliances has grown immensely (Hagedoorn, 2002) and because we wanted to ensure a sufficient homogeneity of the research domain (Eisenhardt and Schoonhoven, 1996). In addition, we followed Robson, Katsikeas, and Bello (2008) and focused on ongoing bilateral alliances between for-profit firms because of their wide prevalence and the idiosyncratic goals, policies, and structures of other forms of alliances. We are aware that these restrictions may affect the generalizability of our results, but we believe they were required to enhance the study's internal validity (Mohr and Spekman, 1994).

Data were gathered in Germany during six phases. In the first phase, we obtained an initial list of 3,326 firms from *Hoppenstedt Firmendatenbank*, a commercial database containing contact information for approximately 250,000 German enterprises. The 3,326 firms in our target population were affiliated with one of the following industries: machinery, chemicals, motor vehicles, electronics, and information technology. We selected these industries since they have been found to be among the most prolific in alliance activity (e.g., Grant and Baden-Fuller, 2004). In the second phase, we contacted each firm by phone to inquire whether it currently participated in an R&D alliance (cf. Lunnan and Haugland, 2008). The reason for aiming at ongoing (as opposed to past) alliances was that key informant reports are more reliable and valid when they pertain to issues that are relatively recent (Homburg *et al.*, 2012). Based on the responses from the phone calls, we sent questionnaires to 1,893 eligible firms in the third phase. These questionnaires contained items pertaining to clan culture as well as firm-level control variables. We targeted heads of R&D as primary key informants in our study. Because these managers are responsible for overseeing the firm's R&D activities, they are knowledgeable about R&D agreements with other firms, making them appropriate respondents. After a three-wave mailing approach via e-mail (Dillman, 2000), a total of 512 responses were returned. This corresponds to

a response rate of 27.0 percent, which is in line with comparable studies using top managers as key informants (e.g., Lunnan and Haugland, 2008; Tsang, 2002).

In the fourth phase, we contacted the 512 managers again and requested a list of up to three R&D partner firms as well as the name of an appropriate key informant in each partner firm. In total, 210 managers provided contact information for at least one alliance partner along with information on contractual safeguards and relationship-specific control variables, resulting in a response rate of 41.0 percent. Given the high confidentiality of alliance partner information (Carson, 2007), this can be considered a satisfactory response. Reasons for declining to list the alliance partners included legal issues, general firm policies, and lack of support from the executive board. In the fifth phase, we contacted the managers in the partner firms by phone and asked them for their participation in our study. We sent the questionnaires that contained items pertaining to their views of the trusting party as well as alliance-related issues to those managers who agreed to participate. In the introductory comments of our survey, we asked these executives to relate their responses only to this specific alliance of their firm (Tsang, 2002). After various telephone and e-mail reminders, the sixth phase concluded our data collection with a total of 180 responses. Nine informants failed a *post hoc* respondent competency test (Kumar, Stern, and Anderson, 1993), yielding usable data on 171 dyads. While this sample size may not be considered very large, it is very much in line with other strategy studies using primary data (cf. Phelan, Ferreira, and Salvador, 2002: 1166). The characteristics of the firms and respondents in our sample are summarized in Table 1.

To verify the appropriateness of the key informants, questionnaire items asked about the tenure and alliance-related knowledge of the respondent (Kumar *et al.*, 1993). More than two-thirds of the participants in our final dataset had been with their current firm for six years or longer (Table 1). In addition, the mean of the item that assessed the respondent's self-reported knowledge of the R&D alliance on a five-point scale, ranging from 1 (*poor*) to 5 (*excellent*), was 4.31 ($SD = 0.67$) among focal firms and 4.41 ($SD = 0.73$) among partner firms, suggesting that the respondents were very well informed. Overall, the results pertaining to key informant competency were comparable

Table 1. Sample composition

	Sample of trusted firms (%)	Sample of trusting firms (%)
Industry		
Machinery	47.4	36.5
Chemicals	14.6	11.3
Motor vehicles	15.8	5.7
Electronics	5.8	17.6
Information technology	16.4	15.7
Other	0.0	13.2
Firm size		
< 100 employees	6.4	56.5
100–249 employees	39.2	17.6
250–499 employees	24.6	5.3
500–999 employees	12.9	4.7
1,000–4,999 employees	9.9	8.8
≥ 5,000 employees	7.0	7.1
Firm age		
< 5 years	4.1	3.6
5–9 years	9.4	17.8
10–19 years	4.7	22.5
20–29 years	15.2	9.5
30–49 years	22.8	16.6
≥ 50 years	43.9	30.2
Position of respondent		
Head of R&D	66.2	24.4
R&D project leader	2.4	15.5
Member of executive board	16.3	45.2
Head of alliance department	5.4	10.7
Other (e.g., head of construction, CTO)	9.6	4.2
Tenure of respondent in firm		
≤ 1 year	9.3	4.1
2–5 years	15.8	22.8
6–10 years	26.9	30.4
11–15 years	17.0	17.5
≥ 16 years	31.0	25.1

with those reported in similar studies (e.g., Poppo *et al.*, 2008; Robson *et al.*, 2008).

For all rounds of survey data collection, we checked for nonresponse bias in three different ways. First, we assessed a nonresponse bias by comparing early and late respondents (Armstrong and Overton, 1977). Specifically, we tested the first and last quartiles of the returned questionnaires for significant differences across means for each of the theoretical constructs. The results of the *t*-tests indicated no significant differences between early and late respondents ($p > 0.05$). Second, we examined whether the nonresponding firms differed from the responding firms in terms of size and industry segment using information from *Hoppenstedt Firmendatenbank* and found

no significant differences ($p > 0.05$). Third, we conducted a telephone survey of randomly selected nonparticipants, in which we contacted 30 focal (i.e., trusted) firms and 18 partner (i.e., trusting) firms asking them to answer four questions selected from our questionnaires (cf. Zaheer, McEvily, and Perrone, 1998). The t -test of group means revealed no significant differences between respondents and nonrespondents on any of the questions ($p > 0.05$). The results of these three tests provide consistent evidence that nonresponse bias is not a problem in our data.

Measures

Table 2 reports the measurement items used to operationalize our theoretical constructs. Because the survey was conducted in Germany, we had the items translated and backtranslated to ensure accuracy. When adequate measures were available, we adapted them from prior studies. Some items were modified to reflect the specific context of our study (Dillman, 2000). Following the recommendations of DeVellis (2003), the questionnaire items were further refined through in-depth interviews with 13 managers, an item sorting pretest based on Anderson and Gerbing (1991) among 15 scholars familiar with alliance research, and a pretest of the questionnaire conducted with 21 managers. When possible, survey information obtained from the key informant was triangulated with complementary data to establish its accuracy (Homburg *et al.*, 2012).

Dependent variable

Trustworthiness captures the degree to which an exchange partner is perceived not to exploit one's exchange vulnerabilities (Mayer *et al.*, 1995). In line with Mayer *et al.* (1995), trustworthiness is conceptualized as a second-order construct reflected by three dimensions: ability, benevolence, and integrity. Ability refers to the trustee's skills and competencies that enable the trustee to perform exchange-related tasks effectively. Benevolence denotes the extent to which the trustor believes a trustee wants to do good to him/her. Integrity is the trustor's perception that the trustee adheres to a set of principles that the trustor finds acceptable (Mayer *et al.*, 1995). Together, these three trustworthiness dimensions represent the most widely used facets in organizational

research (McEvily and Tortoriello, 2011). Ability was measured using two items adapted from Johnson *et al.* (1996), while the three items measuring benevolence were based on Ganesan (1994) and Scheer, Kumar, and Steenkamp (2003). Finally, two items measuring integrity were based on the considerations by Dyer and Chu (2003). All three dimensions were measured on a seven-point Likert scale (1 = *strongly disagree*; 7 = *strongly agree*).

Independent variables

Contractual safeguards can be defined as stipulations in a partnership agreement that inflict penalties for the omission of cooperative behaviors or commission of violating behaviors (Parkhe, 1993). We measured the extent of contractual safeguards adopting the index developed by Parkhe (1993) and validated by Reuer and Ariño (2007). Eight items described various deterrents to opportunism, and informants were asked to indicate which of these deterrents were explicitly included as a term in their alliance agreement. Consistent with Parkhe (1993), we arranged the eight items in order of increasing stringency and assigned a weight of 1 to the first item, a weight of 2 to the second item, and so on. These weighted items were then summed and subsequently divided by 36 to compute a composite score of contractual safeguards in the alliance. To cross-validate this measure, we first compared the information gathered from the trusted firm with information on the same measure from the trusting firm. The two composite scores were highly correlated ($r = 0.66$; $p \leq 0.001$), which indicated satisfactory accuracy of our measure. In addition, we were able to obtain access to the actual alliance contracts for a subset of 24 collaborations (either the manager from the trusted or trusting firms shared these with us upon request). Similar to Ryall and Sampson (2009), we performed a content analysis of these contracts, scanning the contract terms and coding the presence of the eight deterrents to opportunism included in our measure of contractual safeguards. Subsequently, we calculated composite scores based on this information and correlated them with the corresponding scores obtained from our survey of trusted firms. Again, we found a high level of correspondence between complementary data sources ($r = 0.57$; $p \leq 0.01$) supporting the accuracy of the survey measure.

Table 2. Measurement items and validity assessment

Construct name	Reference	Items	SFL	Mean	SD	α	CR	AVE
Trustworthiness Ability (<i>strongly disagree</i> [1] to <i>strongly agree</i> [7])	Mayer <i>et al.</i> (1995) Johnson <i>et al.</i> (1996)	This alliance partner can be regarded as a capable and competent alliance partner.	0.76	6.02	1.03	0.69	0.69	0.52
		This alliance partner is knowledgeable about everything relevant to alliances.	0.69	5.37	1.10			
Benevolence (<i>strongly disagree</i> [1] to <i>strongly agree</i> [7])	Ganesan (1994) and Scheer <i>et al.</i> (2003)	This alliance partner would go out of its way to make sure that we are not damaged or harmed.	0.94	3.64	1.62	0.87	0.88	0.70
		This alliance partner would make sacrifices for us.	0.84	3.40	1.64			
		Though circumstances change, this alliance partner would be ready and willing to offer assistance and support.	0.75	4.14	1.73			
Integrity (<i>strongly disagree</i> [1] to <i>strongly agree</i> [7])	Dyer and Chu (2003)	This alliance partner does not take excessive advantage of us even when the opportunity is available.	0.71	5.43	1.33	0.80	0.80	0.67
		This alliance partner only makes adjustments (e.g., as market conditions change) in ways perceived as “fair” by us.	0.94	5.42	1.19			
Contractual safeguards (<i>no</i> [0], <i>yes</i> [1])	Parkhe (1993)	Which of the following is explicitly included as a term in your alliance agreement?	n/a ^a			n/a ^a	n/a ^a	n/a ^a
		Periodic written reports of all relevant transactions		0.30	0.46			
		Prompt written notice of any departures from the agreement		0.34	0.48			
		The right to examine all relevant records through a firm of CPAs		0.06	0.25			
		Designation of certain information as proprietary and subject to confidentiality provisions of the contract		0.60	0.49			
		Non-use of proprietary information even after termination of agreement		0.55	0.50			
		Termination agreement		0.23	0.43			
		Arbitration clauses		0.20	0.40			
		Lawsuit provisions		0.35	0.48			
		The glue that holds my organization together is loyalty and tradition. Commitment to this firm runs high.	0.73	5.60	1.16	0.83	0.83	0.56

Table 2. Continued

Construct name	Reference	Items	SFL	Mean	SD	α	CR	AVE
Familiarity (<i>strongly disagree</i> [1] to <i>strongly agree</i> [7])	Leonidou <i>et al.</i> (2006)	The head of my organization is generally considered to be a mentor, sage, or a father/mother figure.	0.67	4.32	1.62			
		My organization emphasizes human resources. High cohesion and morale in the firm are important.	0.82	5.48	1.40			
		My organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.	0.77	4.89	1.49			
		This alliance partner is a well-known firm to us.	0.65	5.96	1.28	0.91	0.92	0.70
		We are familiar with the alliance partner's business environment.	0.67	5.21	1.52			
		We are familiar with the alliance partner's organizational culture, values, and attitudes.	0.91	4.88	1.63			
		We are aware of many things about the organizational structure of this alliance partner.	0.92	4.84	1.68			
Reputation (<i>much worse</i> [1] to <i>much better</i> [7])	Saxton (1997)	We are familiar with the working methods and processes followed by this alliance partner.	0.89	4.83	1.60			
		How would you rate this alliance partner relative to other firms in the industry in terms of the following criteria:				0.86	0.86	0.55
		Quality of products	0.70	5.51	0.97			
		Innovativeness	0.64	5.46	1.12			
		Ability to retain valuable employees	0.71	5.01	1.31			
		Customer relationships	0.83	5.39	1.00			
		Overall reputation	0.85	5.53	1.10			
Firm size (<100 employees [1] to $\geq 5,000$ employees [6])	Capron and Mitchell (2009)	How many employees does your company have?	n/a ^a	3.02	1.35	n/a ^a	n/a ^a	n/a ^a
Firm age (<5 years [1] to ≥ 50 years [6])	Capron and Mitchell (2009)	For how long has your company existed?	n/a ^a	4.75	1.49	n/a ^a	n/a ^a	n/a ^a
Industry (<i>no</i> [0]; <i>yes</i> [1])	Poppo <i>et al.</i> (2008)	Which of the following is your company's primary industry sector?	n/a ^a			n/a ^a	n/a ^a	n/a ^a
		Chemicals		0.15	0.35			
		Motor vehicles		0.16	0.37			
		Electronics		0.06	0.24			
		Information technology (<i>base dummy</i> : machinery)		0.16	0.37			

Table 2. Continued

Construct name	Reference	Items	SFL	Mean	SD	α	CR	AVE
Alliance type (<i>no</i> [0]; <i>yes</i> [1])	Reid <i>et al.</i> (2001)	Please classify your alliance in one of the following categories:	n/a ^a			n/a ^a	n/a ^a	n/a ^a
		Joint venture (JV)		0.08	0.27			
		Equity alliance (<i>base dummy</i> : non-equity alliance)		0.05	0.22			
Alliance duration (# years)	Krishnan <i>et al.</i> (2006)	For how long has your alliance been in existence?	n/a ^a	6.85	7.98	n/a ^a	n/a ^a	n/a ^a

SFL = standardized factor loading.

^a SFL, α , CR, and AVE not available for formative indices, single item measures, or dummy sets.

Clan culture refers to the degree to which an organization's underlying values and assumptions emphasize collective goals, participation, and teamwork (Cameron and Quinn, 1999). To measure the extent to which the trusted firm is characterized by a clan culture, we used four items introduced by Cameron and Freeman (1991). These items contained brief scenarios describing the organization's general cultural characteristics, leadership style, institutional bonding, and strategic emphases. They were formulated as Likert-type statements anchored by a seven-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). To assess the accuracy of the measure for clan culture, we gathered information from a second key informant in a total of 36 trusted firms and calculated ICC(1) to determine the level of agreement. We obtained an ICC(1) of 0.25, which clearly exceeded Bliese's (1998) 0.1 cutoff and suggested sufficient convergent validity.

Contingency variables

Familiarity denotes the degree to which one party in an exchange relationship is knowledgeable about the characteristics of the other party. To capture this construct, we modified and recoded five items that Leonidou, Palihawadana, and Theodosiou (2006) used to measure the converse construct of distance. The items were anchored on a seven-point Likert scale (1 = *strongly disagree*; 7 = *strongly agree*) and asked the informant in the trusting firm to assess his/her familiarity with various facets of the partner firm. We corroborated this measure by correlating it with partner-specific alliance experience. While both constructs are distinct, there is reason to assume that they are

interrelated (Gefen *et al.*, 2003). Partner-specific alliance experience was measured as the natural logarithm of the number of prior agreements with the same partner within the last five years (Zollo *et al.*, 2002). This measure was correlated with the composite score of the familiarity construct, computed as the simple average of its items. Both measures were significantly correlated ($r = 0.31$; $p \leq 0.001$), which supported the accuracy of our perceptual familiarity measure.

Reputation is defined as the firm's favorable standing in the community that is based on its recognized achievements (Radbourne, 2003) such as producing high-quality products, retaining valuable employees, maintaining long-lasting customer relationships, and sustaining above-average innovativeness (e.g., Deephouse and Carter, 2005; Rindova, Pollock, and Hayward, 2006). The construct was captured using five items that were based on the measures used by Saxton (1997). These items were measured on a seven-point Likert scale (1 = *much worse*; 7 = *much better*).

Control variables

Consistent with previous studies (e.g., Poppo and Zenger, 2002), we included the trustees' firm size, firm age, and industry as controls. In addition, we controlled for alliance type and alliance duration. Firm size was measured by an item representing the number of employees (e.g., Capron and Mitchell, 2009). It was included in the analysis to account for potential differences in the trustworthiness of small and large firms (Dyer and Chu, 2003). We measured firm age in terms of the number of years since the incorporation of the firm (e.g., Schilke, forthcoming). Given the

“liability of newness” suggested by Stinchcombe (1965), there is reason to assume that young firms may be perceived as less trustworthy compared to established firms. Respondents in trusted firms also classified their firms’ industry. Based on the five industries represented in our study, four dummy variables (chemicals, motor vehicles, electronics, and information technology) were included in the structural model (e.g., Poppo *et al.*, 2008). In addition, respondents specified the alliance type as one of the following three (e.g., Reid, Bussiere, and Greenaway, 2001): joint venture (alliance is a separate entity both partners have a share in), equity alliance (no separate entity; partners have mutual equity stakes), or non-equity alliance (no separate entity; no mutual equity stakes). Finally, we measured alliance duration with an item capturing the number of years the alliance had been in existence at the time of measurement (Krishnan, Martin, and Noorderhaven, 2006) and used a logarithmic transformation to correct skewness, since many of the alliances were relatively young. Including alliance duration as a control accounts for the fact that trustworthiness perceptions tend not to be constant but may evolve as the alliance progresses (Schilke and Cook, 2013).

Robustness checks

Common method bias

Though using key informants as data sources is common in organizational research, it exposes data to a potential common method bias. To overcome problems associated with common method bias in our study, we closely followed the recommendations of Podsakoff *et al.* (2003) and controlled for common method bias through two procedural remedies. First, we obtained measures of the predictor and criterion variables from different sources (i.e., through dyadic data from both the trusted and trusting firm). Second, in an effort to reduce evaluation apprehension, we promised to protect respondent’s anonymity and assured them that there were no right or wrong answers. Besides these procedural remedies, we also used two statistical procedures to determine the presence of common method bias in our data. First, we performed Harman’s one-factor test by loading all indicators of the study constructs into an exploratory factor analysis. Results revealed that no single factor explained more than 22.9 percent of the total

variance in the variables, suggesting that common method bias was unlikely to be a serious problem in this study. Second, we applied the partial correlation adjustment procedure suggested by Lindell and Whitney (2001). Following Krishnan *et al.* (2006), we used tenure of the respondent in the trusting firm as the marker variable. All significant zero-order correlations remained significant after the partial correlation adjustment. In sum, we conclude that common method bias does not constitute a significant problem in this study.

Endogeneity

Because contract design choice may be influenced by expected partner trustworthiness (Connelly, Miller, and Devers, 2012; Puranam and Vanneste, 2009; Weber, Mayer, and Wu, 2009), contractual safeguards might not be entirely exogenous to the model predicting alliance partner trustworthiness, which may cause estimates to be inconsistent (Hamilton and Nickerson, 2003; Shaver, 1998). Thus, we conducted the Hausman (1978) endogeneity test (e.g., Wooldridge, 2008) using organizational centralization of alliance management as the instrumental variable. Contractual safeguards can be expected to be more comprehensive when organizations possess centralized units supporting the set-up and coordination of alliances (Kale, Dyer, and Singh, 2002). We measured this instrumental variable on a seven-point scale (1 = *strongly disagree*; 7 = *strongly agree*) using the following item: “In our firm, there is a great deal of support for the management of R&D alliances through a central unit” (Schilke and Goerzen, 2010). Using Stata 12 software, Hausman’s (1978) endogeneity test was not significant ($\chi^2 = 1.12$; $p > 0.1$), which attenuated concerns of endogeneity in our analysis.

In addition, we conducted a supplementary propensity score matching (PSM) analysis. Invoking the ignorability assumption, PSM allows biases in the estimate of the treatment effect to be removed by adjusting for differences in a set of pretreatment covariates (Morgan and Winship, 2007). We used the STATA command *dosereponse* to perform the PSM analysis (Bia and Mattei, 2008). To estimate the conditional distribution of the treatment (contractual safeguards), we used all of our control variables except for alliance duration, because it is not temporally prior to contractual safeguards. After accounting for the

obtained propensity score, the effect of contractual safeguards remained significant for all observed levels of the treatment ($p \leq 0.05$). This finding corroborates the structural equation modeling results reported in the Results section of the paper, further alleviating any concerns that endogeneity might have biased our estimates.

Reliability and validity

Before testing our hypotheses, we used confirmatory factor analysis (CFA) to evaluate the validity of the measures (Anderson and Gerbing, 1988). The CFA measurement model fit the data satisfactorily, $\chi^2(324) = 455.26$; $\chi^2/df = 1.41$; CFI = 0.94; GFI = 0.86; TLI = 0.91; SRMR = 0.05. The results showed that all standardized item loadings were significantly greater than zero ($p \leq 0.001$), positive, and high in magnitude (≥ 0.65), providing evidence of convergent validity.

Then, we computed coefficient alphas (α), composite reliabilities (CR), and average variances extracted (AVE). As shown in Table 2, with the single exception of the ability measure, all values exceeded the recommended thresholds of 0.7, 0.7, and 0.5, respectively (Bagozzi and Yi, 1988). Thus, the individual measures demonstrated adequate convergent validity and reliability.

Further, we assessed discriminant validity in two ways. First, following the procedure that Fornell and Larcker (1981) proposed, we found that the square root of the average variance extracted by the measure of each multi-item factor exceeded the correlation of that factor with all other factors in the model (see Table 3). Second, we tested discriminant validity by running pairwise χ^2 -difference tests for the multi-item factors (Anderson and Gerbing, 1988). These tests compared a model in which the factor correlation is fixed at 1 with an unrestricted model. Every restricted model exhibited a significantly worse fit when compared to the unrestricted model. Overall, our results demonstrate appropriate discriminant validity.

In a separate analysis, we tested the postulated structure of the multidimensional trustworthiness construct by means of second-order confirmatory factor analysis (Bagozzi, 1994). In the model, trustworthiness is the second-order factor reflected by three first-order dimensions: ability, benevolence, and integrity. The

global fit criteria indicate a good fit of this model, $\chi^2(11) = 34.29$; $\chi^2/df = 3.12$; CFI = 0.96; GFI = 0.94; TLI = 0.93; SRMR = 0.05. The standardized loadings of the second-order construct on its three respective dimensions are 0.99, 0.73, and 0.90 ($p \leq 0.001$). We then compared a three-factor model with a one-factor structure using a χ^2 -difference test. The fit of the single-factor model was significantly worse compared with the three-factor model ($\Delta df = 3$; $\chi^2_{diff} = 98.56$; $p \leq 0.001$). These results underline the reliability and validity of the three-dimensional trustworthiness measure.

RESULTS

To test our hypotheses, we used the covariance-based structural equation modeling software AMOS 16.0 (Arbuckle, 2007) and applied the maximum likelihood (ML) procedure. Skewness and kurtosis in the data were well below the common cutoffs of 2 and 7, and thus ML estimation can be expected to provide reliable estimates (Curran, West, and Finch, 1996). Structural equation modeling has the advantage of estimating relationships between latent variables and observed indicators simultaneously with structural relationships between latent variables; it thus explicitly accounts for measurement error and allows for more accurate conclusions about relationships between constructs compared to simpler modeling processes (Bollen, 1989).

First, we estimated a baseline model with contractual safeguards and clan culture as the independent variables and trustworthiness as the outcome variable. The model also included the control variables. The fit measures for this model showed satisfactory values, $\chi^2(130) = 185.19$; $\chi^2/df = 1.43$; CFI = 0.95; GFI = 0.91; TLI = 0.92; SRMR = 0.05. Figure 1 presents the estimates for the structural paths in the model. The path coefficient of 0.17 points to a positive, significant ($p \leq 0.05$) relationship between contractual safeguards and trustworthiness, providing support for Hypothesis 1. The coefficient of the path from clan culture to trustworthiness shows that clan culture is related positively and significantly to trustworthiness ($\beta = 0.18$; $p \leq 0.05$), in support of Hypothesis 2.

Subsequently, we explored whether clan culture relates to perceived trustworthiness more strongly compared to contractual safeguards, as could be

Table 3. Correlations and square root of AVE

Construct	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Ability	0.72															
2 Benevolence	0.60**	0.84														
3 Integrity	0.66**	0.58**	0.82													
4 Contractual safeguards	0.01	-0.12	0.04	n/a												
5 Clan culture	0.21**	0.17*	0.13†	-0.11	0.75											
6 Familiarity	0.30**	0.33**	0.33**	0.04	0.12	0.84										
7 Reputation	0.43**	0.39**	0.47**	-0.08	0.26**	0.27**	0.74									
8 Firm size	-0.01	-0.12	-0.05	0.15*	-0.18*	0.02	0.04	n/a								
9 Firm age	0.16*	0.10	0.12	-0.18*	0.07	-0.01	0.16*	0.12	n/a							
10 Chemicals	0.20**	0.14†	0.15†	-0.02	0.21**	0.02	0.06	0.11	0.13	n/a						
11 Motor vehicles	-0.14†	-0.24**	-0.12	0.28**	-0.07	0.04	-0.09	0.02	0.01	-0.18*	n/a					
12 Electronics	0.05	0.01	0.06	-0.02	-0.08	-0.05	-0.07	0.03	0.06	-0.10	-0.11	n/a				
13 Information technology	-0.13†	-0.01	-0.04	0.03	-0.04	0.14†	-0.10	-0.04	-0.35**	-0.18*	-0.19*	-0.11	n/a			
14 Joint venture	-0.14†	-0.15†	-0.02	-0.09	0.05	-0.09	0.06	-0.05	0.17*	-0.06	-0.01	0.02	-0.13†	n/a		
15 Equity alliance	0.19*	0.20**	0.16*	-0.14†	0.13†	0.15*	0.20*	0.07	0.09	-0.02	0.04	-0.06	-0.10	-0.07	n/a	
16 Alliance duration	0.03	0.12	0.02	-0.12	0.06	0.29**	0.16*	0.12	0.17*	-0.05	0.04	-0.04	-0.06	-0.08	0.01	n/a

$n = 171$

Bold numbers on the diagonal show the square root of AVE, numbers below the diagonal the correlations.

AVE not available for formative and single-item measures.

** $p \leq 0.01$; * $p \leq 0.05$; † $p \leq 0.1$

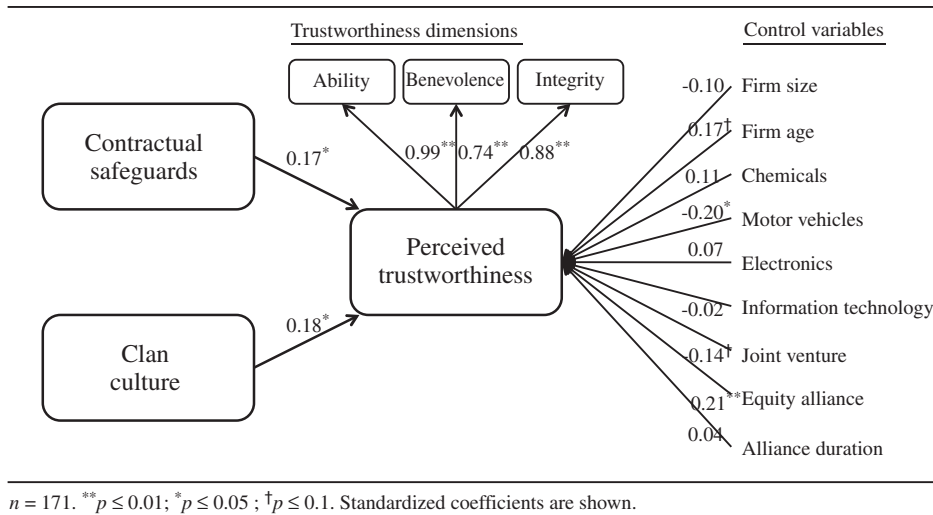


Figure 1. Results for the full-sample structural model

concluded from the slightly larger path coefficient. To provide a sound statistical assessment, we performed a χ^2 -difference test to examine whether the difference between both effects is significant. We constrained the two path coefficients to be equal, creating a new, restricted model that is nested in the original, unrestricted model. Comparing the fit of these two models, we find that the restriction did not significantly decrease the model fit ($\Delta df = 1$; $\chi^2_{diff} = 1.89$; $p > 0.1$), suggesting that, *ceteris paribus*, the effects of the two antecedents on trustworthiness do not differ significantly.

Hypotheses 3 and 4 examined the differential effects of contractual safeguards and clan culture under diverse conditions. To test these hypotheses, we again relied on χ^2 -difference tests; more specifically, we applied multi-group structural equation modeling based on a mean split of the sample along the values of the relevant contingency variable to create two subsamples (Hair *et al.*, 2006).

Hypothesis 3a predicted that the relationship between clan culture and perceived trustworthiness is stronger when familiarity is high rather than low. In line with this hypothesis, we found that familiarity has a highly significant effect on the clan culture–trustworthiness relationship ($\Delta df = 1$; $\chi^2_{diff} = 4.02$; $p \leq 0.05$); clan culture is more strongly linked to trustworthiness when familiarity is high ($\beta_2 = 0.49$; $p \leq 0.01$) rather than low ($\beta_1 = -0.08$; $p > 0.1$), supporting Hypothesis 3a. Hypothesis 4a stated that the relation between contractual safeguards and

trustworthiness is stronger when the reputation of the trusted party is low rather than high. Given a significant χ^2 -difference ($\Delta df = 1$; $\chi^2_{diff} = 8.07$; $p \leq 0.01$) and a higher path coefficient in the low reputation subsample ($\beta_1 = 0.32$; $p \leq 0.05$) than in the high reputation subsample ($\beta_2 = -0.14$; $p > 0.1$), our results fully support this hypothesis.

Next, we examined our hypotheses regarding the relative effectiveness of the two trustworthiness antecedents in constrained settings. To test Hypotheses 3b and 4b, we analyzed high familiarity and low reputation subgroups, respectively, and constrained the two path coefficients of contractual safeguards and clan culture to be equal. Hypotheses 3b stated that the relationship between clan culture and trustworthiness is stronger than the relationship between contractual safeguards and trustworthiness when familiarity is high. Our data fully support this hypothesis. Setting the two paths to be equal in the high familiarity subgroup significantly decreased model fit ($\Delta df = 1$; $\chi^2_{diff} = 5.47$; $p \leq 0.05$), and we found the estimate for the clan culture–trustworthiness path to be higher ($\beta = 0.49$; $p \leq 0.01$) than the one for the contractual safeguards–trustworthiness path ($\beta = -0.09$; $p > 0.1$). This constellation reverses for the low reputation subgroup. In line with Hypothesis 4b, contractual safeguards have a stronger relationship with trustworthiness ($\beta = 0.32$; $p \leq 0.05$) than does clan culture ($\beta = -0.03$; $p > 0.1$), with the difference between effects being statistically significant ($\Delta df = 1$; $\chi^2_{diff} = 6.24$; $p \leq 0.05$). The path coefficients from multi-group structural equation

modeling analyses are presented in graphic form in supporting information Appendix S1. As a robustness check of our multi-group structural equation modeling results, we also conducted partial least squares (PLS) analyses with linear interaction terms (Chin, Marcolin, and Newsted, 2003). The results are consistent and lend further support to our hypotheses.

POST HOC ANALYSES

To further explore the nuances of the conditional effects of clan culture and contractual safeguards, we performed additional *post hoc* analyses in which we dimensionalized our trustworthiness variable. That is, we calculated a series of multi-group structural equation models in which we substituted trustworthiness with ability, benevolence, or integrity, respectively. We only report the overall pattern of results here; detailed results can be obtained upon request. In the benevolence model, we replicated our earlier findings that clan culture has a stronger effect when familiarity is high rather than low ($\Delta df = 1$; $\chi^2_{diff} = 5.61$; $p \leq 0.05$) and that this effect is also stronger than that of contractual safeguards ($\Delta df = 1$; $\chi^2_{diff} = 6.15$; $p \leq 0.05$). We also identified analogous differences in the competence model ($\Delta df = 1$; $\chi^2_{diff} = 9.74$; $p \leq 0.01$ and $\Delta df = 1$; $\chi^2_{diff} = 3.79$; $p \leq 0.05$, respectively). However, no such differences were identified in the integrity model (both $ps > 0.1$). Further, only in the integrity model did we find that contractual safeguards have a stronger effect when reputation is low rather than high ($\Delta df = 1$; $\chi^2_{diff} = 4.60$; $p \leq 0.05$) and that this effect is stronger than that of organizational culture ($\Delta df = 1$; $\chi^2_{diff} = 6.34$; $p \leq 0.05$), whereas these differences were not significant in the ability and benevolence models (all $ps > 0.1$).

Finally, based on theoretical considerations, our moderating Hypotheses 3a and 4a only pertain to one of the two main effects. In *post hoc* analyses, we also looked into the contingency factors' influence on the other main effect—that is, we explored whether familiarity also affects the effect of contractual safeguards and whether reputation affects the effect of clan culture. Supporting information Appendix S1 shows the subgroup-specific coefficients. χ^2 -difference tests revealed that both moderating effects are nonsignificant

($\Delta df = 1$; $\chi^2_{diff} = 3.42$; $p > 0.05$ and $\Delta df = 1$; $\chi^2_{diff} = 2.56$; $p > 0.1$, respectively).

DISCUSSION AND CONCLUSION

In the past several years, scholarly interest in the topic of trustworthiness has exploded. As summarized in several literature reviews (Fulmer and Gelfand, 2012; Kramer, 1999; McEvily and Zaheer, 2006), researchers agree that trustworthiness is a key ingredient in successful economic exchange. But what is also common to these literature reviews is the recognition that conceptions of the basis of trustworthiness remain fragmented and that this fragmentation impairs scientific progress. In particular, while some researchers emphasize calculative accounts, others tend to focus on the relational basis of trustworthiness (cf. Kramer, 1999; McEvily and Zaheer, 2006).

The main objective of this study was to help to integrate the calculative and relational approaches to trustworthiness by clarifying the contextual conditions under which each perspective is more relevant and investigating these conditions empirically in a study of strategic alliances. First, we examined the direct effects of antecedents derived from these perspectives in a single model, which allowed us to test whether the relational component affects trustworthiness after controlling for the calculative component and vice versa. Second, we scrutinized the assumption that one approach is more important than the other by investigating the nature of the relationship context and its effect on whether calculative or relational aspects relate more strongly to trustworthiness. Our study clearly advances the extant literature by showing that the effects of calculative and relational antecedents to trustworthiness are not equally strong when taking into consideration the organization's familiarity with the exchange partner as well as the reputation of the partner. It thus takes a significant step forward in developing a more generalizable theory of context that elaborates under which conditions different sources of trustworthiness are particularly relevant—an important requirement for the field of trust research to move forward and to generate specific insights for clearly defined settings (McEvily and Tortoriello, 2011).

Analyzing organizational trustworthiness in the setting of strategic alliances, our research started out with the notion that perceptions of

trustworthiness associated with alliance partners can emerge in different ways. Acknowledging the validity of the arguments from both the calculative tradition (e.g., Axelrod, 1985; Gambetta, 1988; Schelling, 1960) and the relational tradition (e.g., Mayer *et al.*, 1995; McAllister, 1995; Tyler and Kramer, 1996), we identified contractual safeguards and clan culture as critical antecedents to alliance partner trustworthiness. While contractual safeguards increase trustworthiness perceptions by restricting partner behavior through explicit constraints that make it rational to act in a trustworthy manner (consistent with the calculative perspective), an organizational culture that rewards employees who refrain from opportunistic behavior accounts for “principled” trustworthiness that is based on the intrinsic values of the organization (consistent with the relational perspective).

Subsequently, we argued that the relative importance of these two sources of trustworthiness differs depending on the particular context of the interorganizational relationship. Our results show that contextual characteristics strongly influence the importance of contractual safeguards and clan organizational culture as drivers of trustworthiness. More specifically, we find that in situations in which familiarity with the alliance partner is high, clan culture becomes much more important as an origin of trustworthiness—significantly more important than contractual safeguards. In addition, our results reveal that contractual safeguards relate more strongly to trustworthiness when the alliance partner lacks a favorable reputation.

Overall, our empirical findings suggest that both contractual safeguards and clan culture are significantly linked to trustworthiness and that their effects are comparable in size—but only when we consider our entire sample. The relevance of contractual safeguards increases drastically once we focus on those relationships in which the partner firm lacks a strong reputation in the marketplace. Here, the effect of safeguards on trustworthiness is highly significant while the effect of clan culture is not. Conversely, the influence of clan culture is heightened when partners have established above-average familiarity. Here, a firm’s clan culture becomes a very strong antecedent to trustworthiness—significantly stronger than contractual safeguards. Our *post hoc* analyses suggest that these differences may be driven primarily by the differential effect of clan culture on the trustworthiness dimensions of

ability and benevolence as well as the differential effect of contractual safeguards on the integrity dimension of trustworthiness.

This research contributes to the literature in several significant ways. First, the findings from this study improve our understanding of the origins of organizational trustworthiness. We theorize and confirm empirically that both calculative and relational factors in the form of contractual safeguards and clan culture can contribute to alliance partners being perceived as trustworthy. Therefore, this work helps to integrate previously often separated streams of research on the antecedents to trustworthiness. Notably, our finding of a positive impact of contracts on trustworthiness contradicts some recent theorizing suggesting that contracts may *hamper* trustworthiness (e.g., Puranam and Vanneste, 2009). Instead, our results provide empirical support for theoretical models describing how contractual structures *increase* trustworthiness perceptions (e.g., Sitkin, 1995). Clearly, further research on the nuances of the contract-trust relationship would be helpful to further explore these opposing positions.

Second, and perhaps more importantly, our results indicate that neither the relational nor the calculative approach to trustworthiness is superior per se, but that the strength of their explanatory role depends on the circumstances characterizing the exchange relationship at stake. Thus, we believe our study helps to reconcile contrasting views of the underpinnings of trustworthiness by identifying two key variables that affect their respective scope (i.e., familiarity and reputation).

Third, we also make a methodological contribution to the literature by addressing the conceptualization and measurement of alliance partner trustworthiness. Recent research has called for more fine-grained, yet comprehensive measures of trustworthiness in the context of interfirm relationships (Weber *et al.*, 2009). In an effort to develop such a measurement instrument, we accounted for its multifaceted nature (Mayer *et al.*, 1995) and modeled the trustworthiness of an alliance partner as a second-order factor reflected by the three dimensions of ability, benevolence, and integrity. Building on existing measures derived from various contexts and extensive field interviews with alliance managers, we operationalized these dimensions and assessed the validity of our measurement instrument. Using several advanced statistical analyses, we found evidence that our

multidimensional measure possesses high reliability, as well as construct and discriminant validity. Since a rigorously developed and validated metric is crucial for establishing common ground to allow comparison of results across studies, future alliance researchers may find it valuable to use the trustworthiness measurement instrument presented in this research.

This research has four limitations worth mentioning. These limitations also provide important avenues for further research. First, our study focused on the origins of trustworthiness, not on its consequences. While previous research has indicated that trustworthiness may lead to decreased transaction costs, improved learning, and superior alliance performance (Dyer and Chu, 2003; Szulanski *et al.*, 2004), we agree with Robson *et al.* (2008) that much work remains to be done to clarify the various and potentially contingent consequences of trustworthiness. For example, relating trustworthiness to organizational-level (rather than relationship-level) outcomes may contribute to the growing stream of research on the factors that explain why some organizations have greater alliance success than others (Kale *et al.*, 2002; Schilke and Goerzen, 2010). Potential dependent variables may include the firm's alliance portfolio performance, overall attractiveness as an alliance partner, or total number of alliances. Second, our conceptual arguments and empirical analyses only pertain to ongoing alliances between firms. However, it is likely that trustworthiness cues already play an important role in the very early stages in the formation of inter-organizational relationships (McKnight *et al.*, 1998). Future studies should investigate calculative and relational drivers of trustworthiness perceptions in the partner search and selection phases. Because in many cases familiarity between partners will be low in these early stages, our results indicate the importance of contractual provisions. Third, this study is clearly restricted to the empirical context of strategic alliances. We chose this context since strategic alliances are characterized by a high degree of uncertainty and transaction-specific investments (Leiblein, 2003), making opportunism and, conversely, trustworthiness highly relevant concepts. Rousseau (2004) notes that middle range theories are necessary to fully understand the nature of trustworthiness. Each of these theories is confined to a single setting, and the settings are likely to differ significantly. Future

research should thus shed light on the calculative and relational factors that serve as antecedents to trustworthiness in contexts other than strategic alliances, such as in arm's length relationships or mergers. Finally, our data do not allow us to identify which party was the leading force in putting in the contractual safeguards—although it would be clearly interesting to investigate how this would affect perceptions of trustworthiness. In the future, experiments might be best suited to clearly allocate the locus of control in the design of contracts and to investigate its effects on subsequent trustworthiness perceptions.

In sum, our research provides important new insights into the sources of the trustworthiness of alliance partners. Specifically, the study underscores the need to move beyond drawing exclusively from either the calculative or the relational perspective in seeking to more fully understand the range of factors affecting perceptions of trustworthiness. In addition, while the results of our integrative research effort show that neither perspective is superior per se, we identify two relevant conditions that determine their respective significance: familiarity with and reputation of the exchange partner. We hope our study stimulates future research that continues to explore the complex and contingent sources of trustworthiness from additional angles to further advance knowledge of this significant phenomenon.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

APPENDIX S1. Path coefficients from multi-group structural equation modeling analyses.