



# Formal control and social control in domestic and international buyer–supplier relationships

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## ABSTRACT

Focusing on long-term buyer–supplier relationships, this article addresses two questions: (1) What are the antecedents that lead to the adoption of formal control, social control, or both? (2) What is the nature of the relationship between formal control and social control – are they substitutes or complements? We develop a model to investigate the impact of the length of cooperation and institutionalization on the use of control mechanisms. Further, we argue that in China, formal control and social control may be substitutes in domestic buyer–supplier relationships, but they may be complements in international relationships. Survey data collected nationwide with executives in 380 domestic and 200 international buyer–supplier relationships in China are used to test our hypotheses.

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## 1. Introduction

As trade barriers have been reduced and IT and logistics technologies have improved, buyer–supplier relationships increasingly involve not only domestic partners but also international partners (Joshi, 2009; Kaufmann and Carter, 2006). Many firms in developed countries establish buyer–supplier relationships with firms from emerging economies such as China. According to the U.S. Department of Commerce (2007), U.S. automakers imported \$ 8.5 billion worth of Chinese automotive parts in 2007, making China the fourth largest source of auto parts after Mexico, Canada, and Japan. How to effectively manage domestic and international buyer–supplier relationships thus represents a major challenge for many firms.

Control mechanisms in interfirm cooperation – structural arrangements deployed to regulate partners' behavior – greatly influence the success of buyer–supplier relationships (Fryxell et al., 2002). Choosing effective control mechanisms is a must when managing these interorganizational relationships (Jap and Ganesan, 2000). There are two broad categories of control mechanisms:

(1) formal control (which primarily relies on contracts) and (2) social control (which primarily relies on informal means) (Dyer and Singh, 1998; Uzzi, 1997). The existing literature has focused on two crucial questions: (1) What are the antecedents that lead to the adoption of formal control, social control, or both in domestic and international buyer–supplier relationships? (2) What is the nature of the relationship between formal control and social control in explaining cooperation performance – are they substitutes or complements?

Addressing the first question, the existing literature has generally adopted transaction cost economics (TCE) as its underlying paradigm (Williamson, 1985; Wuyts and Geyskens, 2005). This is mainly because TCE focuses on the make-or-buy decision, which is crucial in buyer–supplier relationships (Williamson, 2008). Researchers in this stream assume that minimizing transaction costs is the fundamental driver for firms to adopt various control mechanisms in interfirm exchanges (Poppo and Zenger, 2002). Thus, several transaction cost factors have been identified as antecedents of control mechanisms, including asset specificity, environmental uncertainty, and behavioral uncertainty (Beckman et al., 2004; Ghosh and George, 2005; Poppo and Zenger, 2002; Reuer and Ariño, 2007; Rindfleisch and Heide, 1997).

Despite the significant insights generated by TCE-based research, findings have been inconsistent. For example, Joshi and Campbell (2003) and Poppo and Zenger (2002) report contrasting findings on the relationship between environment dynamism and social control. These inconsistent findings lead

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Madhok (2002) and White and Lui (2005) to suggest that TCE may be relatively narrow to adequately account for how firms choose formal or social control in interfirm relationships. According to Zhou et al. (2003), three logics underlie the behaviors of firms in economic exchanges: (1) transactions costs, (2) social relations, and (3) institutional constraints. Thus, in addition to TCE, social network theory and institutional view may also provide helpful insights on the adoption of control mechanisms in interfirm exchanges (Lin et al., 2009).

Empirically, most existing research has focused on firms in developed economies. As our research horizon now increasingly expands to Asian countries such as China, India, and Korea (Jiang et al., 2007; Zhao et al., 2007), it is unclear whether the same sets of antecedents apply to control mechanisms in these new settings. In this article, we invoke social network theory and institutional view to develop a model to suggest that in China, (1) the length of time that two firms have been involved in a buyer–supplier relationship – which we refer to as “the length of cooperation” – and (2) institutionalization of interfirm beliefs and values in the cooperative process may significantly shape the use of control mechanisms.

With respect to the second question, some authors argue that formal control and social control mechanisms are substitutes (Dyer and Singh, 1998; Ghoshal and Moran, 1996; Gulati, 1995; Uzzi, 1997). However, others suggest that formal and social control mechanisms are complementary in explaining cooperation performance (Luo, 2002; Mesquita and Brush, 2008; Poppo and Zenger, 2002; Wuyts and Geyskens, 2005). These conflicting views, thus, necessitate further investigation. We posit that the type of cooperation – domestic versus international – would influence this relationship. For example, Poppo and Zenger (2002: 722), who study domestic firms in the United States, speculate that “our notion of complements is not likely to generalize to countries that lack a cultural and legal commitment to the use of formal contracts.” However, in China, a country widely believed to be lacking in legal commitment to the use of formal contracts (Peng and Heath, 1996), Luo (2002) reports that some of the Poppo and Zenger (2002) findings on the complementary nature of formal control and social control can also be generalized to a sample of international joint ventures (IJVs). Specifically, Luo (2002) finds that term specificity and contingency adaptability of formal contract between partners interact positively with social control in explaining IJV performance. Extending this line of research, we argue that in China, the relationship between formal control and social control in domestic and international relationships may be different. Specifically, formal control and social control may function as substitutes in domestic relationships, and as complements in international relationships. Following Li et al. (2008), we suggest that the underlying causes of these differences stem from

the different traditions and norms governing domestic and international buyer–supplier relationships in China.

Theoretically, this article provides a more nuanced and in-depth understanding of the two questions on the antecedents and nature of control mechanisms. Empirically, we focus on an important form of interfirm cooperation – long-term buyer–supplier relationships (hereafter referred to as “buyer–supplier relationships” for composition simplicity). This article draws on survey data collected from 380 domestic and 200 international buyer–supplier relationships in China. Most existing work has focused either on domestic or international buyer–supplier relationships. Rarely have scholars systematically compared the differences between these two different relationships (Kaufmann and Carter, 2006). This comprehensive sample thus enables us to test hypotheses that formal and social control may be substitutes in domestic buyer–supplier relationships and complements in international relationships.

## 2. Theoretical foundations and hypotheses

Fig. 1 displays our research framework. It is centered on the notion that effective cooperation depends upon the adoption of appropriate control mechanisms (Dyer and Singh, 1998; Ring and Van de Ven, 1994; Wuyts and Geyskens, 2005). Formal control mechanisms rely primarily (but not exclusively) on explicit contracts. Thus, empirical studies usually focus on the completeness of contracts between partners (Luo, 2002; Poppo and Zenger, 2002; Wuyts and Geyskens, 2005). Formal control mechanisms cultivate cooperation and suppress opportunistic behaviors (Carson et al., 2006), since explicit contracts detail the roles and responsibilities of the partners, determine the deliverable, and specify the adaptive processes necessary to resolve unforeseeable problems (Argyres and Mayer, 2007; Lusch and Brown, 1996). Although formal contracts cannot account for all possible scenarios, the chances for partner firms to act opportunistically may be constrained. Moreover, clauses that specify punishments would discourage short-term opportunism and promote long-term cooperation.

Social control mechanisms in cooperation utilize trust to encourage desirable behavior (Dyer and Singh, 1998). Social control mechanisms usually take the form of joint problem solving, participatory decision making, thorough information exchange, and fulfillment of promises (Fryxell et al., 2002; Luo, 2002). According to Carson et al. (2006) and Uzzi (1997), interfirm trust is a primary foundation for the use of social control. Trust is typically defined as one party’s confidence that the other party in the exchange relationship will not exploit its vulnerabilities (Dyer and Chu, 2003; Zaheer et al., 1998). If there is a high level of trust in cooperation, partners would be more likely to use social control

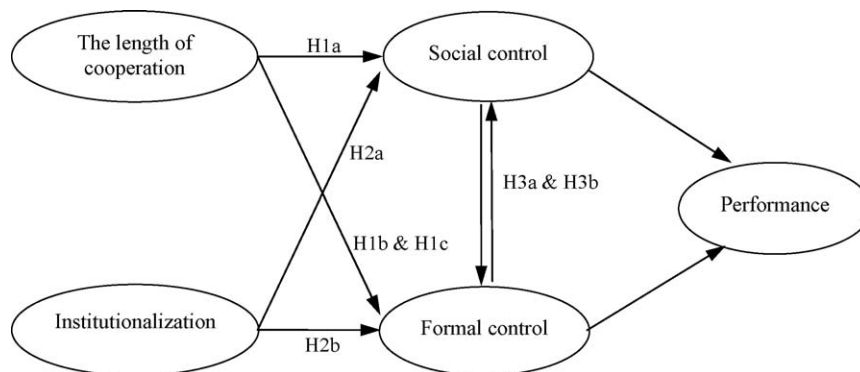


Fig. 1. Our research framework.

(Inkpen and Currall, 2004). Social control mechanisms engender close ties between partners, which will in turn create a separate set of largely informal pressures to preserve and strengthen cooperation (Kaufmann and Carter, 2006; Ring and Van de Ven, 1994). The use of social control mechanisms may further enhance flexibility and efficiency in buyer–supplier relationships because problems are more likely to be openly identified, examined, and resolved (Wuyts and Geyskens, 2005).

Different preferences for the use of formal and social control may exist in various contexts. Traditionally, some scholars believe that firms in Western countries are more likely to rely on formal control to govern interfirm exchange, but firms in emerging economies would be more likely to emphasize social control in cooperation (Peng and Heath, 1996). A critical assumption underlying this conventional logic is that the enforceability of formal contracts rests on the completeness of legal system (North, 1990). The cultural background of firms may also influence the use of control mechanisms. According to Xin and Pearce (1996) and Luo (2002), Chinese managers may prefer to use social control in interfirm cooperation due to the emphasis on social ties in the Chinese culture. However, the pattern of control mechanisms usage may be changing around the world. Managers and scholars in Western countries have increasingly emphasized the advantages of social control in governing interfirm exchange (Gulati, 1995; Uzzi, 1997). At the same time, firms in emerging economies have also begun to emphasize the role of formal contracts (Peng, 2003; Zhou et al., 2003). Thus, it is plausible that formal contracts and social control mechanisms may be selected simultaneously in both domestic and international buyer–supplier cooperation in China, thus triggering further discussion.

### 2.1. The impact of the length of cooperation on control mechanisms

According to social network theory, the structure and the quality of social relations among firms help shape economic action by creating and accessing unique opportunities (Uzzi, 1997). Economic transactions can take place through impersonal exchanges or through stable networks of exchange partners who maintain close social relationships (Peng, 2003). In the context of interfirm cooperation, partners frequently resort to informal, social relations to solve problems and reduce uncertainty. In emerging economies such as China, social relations may play a more important role because of the high levels of uncertainty (Peng and Heath, 1996). Thus, Zhou et al. (2003) argue that social relations can be seen as an important factor that generates variations in interfirm relationships in emerging economies.

Social relations between partners may significantly influence the use of control mechanisms in interfirm exchange. A primary rationale is that social relations constrain partners' behavior, and shift their motivation away from short-term gains by developing trust and creating long-term economic value (Uzzi, 1997). Although the organizational behavior literature has emphasized the role of familiarity (Goodman and Leyden, 1991) and frequency of interaction (McAllister, 1995), the strategy literature often focuses on the length of cooperation as a proxy for the closeness of social relations between partners (Dyer and Chu, 2000; Young-Ybarra and Wiersema, 1999). Thus, we posit that the length of cooperation may positively influence the use of social control mechanisms in domestic and international buyer–supplier relationships. However, the relationship between the length of cooperation and the use of formal control mechanisms may be different in domestic and international contexts.

#### 2.1.1. The length of cooperation and social control mechanisms

The length of cooperation may be positively associated with the use of social control mechanisms through the cultivation of trust

between partners. According to Dyer and Chu (2000), long-term interactions between partners would be helpful to gain an in-depth understanding of each other. This understanding is a primary basis for trust development as it provides insights into the moral character of the partners. A lengthy period of cooperation also permits partners to share private information, decrease information asymmetries, and facilitate the development of trust (Poppo et al., 2008). Finally, the length of cooperation also correlates positively with social attachment between partners, which may facilitate the development of trust (Young-Ybarra and Wiersema, 1999). In China, cultivating trust is usually a time-consuming task. A Chinese proverb, "Time will reveal a person's heart," reflects Chinese beliefs that one needs a relatively long time to know whether partners are trustworthy. Thus, we argue that in both domestic and international buyer–supplier relationships, a longer cooperation experience may boost the use of social control mechanisms. Formally:

**H1a.** The length of cooperation is positively associated with the use of social control mechanisms in domestic buyer–supplier relationships.

**H1b.** The length of cooperation is positively associated with the use of social control mechanisms in international buyer–supplier relationships.

#### 2.1.2. The length of cooperation and formal control mechanisms

There are two competing views on the influence of the length of cooperation on the use of formal control in Chinese domestic buyer–supplier relationships. Traditionally, scholars believe that Chinese social institutions, which rely heavily on informal norms and obligations to govern exchanges, may impede the development and the use of formal contracts to govern economic exchange (Xin and Pearce, 1996). In a traditional Chinese business paradigm, drafting a contract would signal to the partner that it is not trusted or trustworthy (Lovett et al., 1999). Thus, formal contracts would only be adopted when there are no concrete social relations between exchange partners. As social relations develop, formal control would then be supplanted by informal means (Xin and Pearce, 1996). From this perspective, the length of cooperation may diminish the use of formal control in cooperation between Chinese firms.

However, more recent empirical work indicates that Chinese attitudes towards formal contracts have evolved with economic transitions (Ren et al., 2009; Zhang and Li, 2008). For example, Zhou et al. (2003) find the completeness of contracts between Chinese firms to be relatively high: more than 75% contracts cover all five important provisions involving volume, quality, price, deadline, and safeguard. Zhou et al. (2003) further report that there is a positive influence of the existence of social relations on the completeness of contracts. This finding suggests that social relations may be the necessary foundation for the use of formal contracts in interfirm cooperation between Chinese firms. Zhou et al. (2008) further contend that complex contracts in China can also be materialized when social relations are in place. Chinese firms that are cooperating for the first time are more likely to use informal means to initiate business on a smaller scale. Since the stakes are lower, there is little need to develop a comprehensive and complex contract. Only after a long time has passed and social relations between partners are in place will formal contracts be used to govern larger-scale exchange (Mayer and Argyres, 2004). Zhou et al. (2008) conclude that social relations, which take time to develop, are the necessary foundation for drafting effective formal contracts in Chinese domestic buyer–supplier relationships. Thus:

**H1c.** The length of cooperation is positively associated with the use of formal control mechanisms in domestic buyer–supplier relationships.

In international buyer–supplier relationships, we argue that there is no significant relationship between the length of cooperation and the use of formal control. For foreign firms from developed economies, formal contracts are usually deemed as a fundamental governance device of economic exchange (Williamson, 2008). Contracts are especially important in cross-border relationships because of pronounced differences in the recognition of rights, liabilities, and interpretations of the fine line between breach of contracts and tortuous acts (Cavusgil et al., 2004). Foreign partners from economically and legally more developed countries (regardless of whether they are from Asia or the West) are naturally more attuned to a formal contractual approach when entering an unfamiliar country (Luo and Peng, 1999). In a weak institutional environment such as China, foreign firms tend to emphasize more on the role of formal contracts in cooperation (Luo, 2002).

Chinese firms cooperating with foreign partners also tend to have more international experience and understand the role of contracts in restraining opportunism (Luo, 2002). While Chinese firms may emphasize relationship-based approaches in domestic cooperation, they understand that this approach cannot substitute for formal control when dealing with foreign partners. Thus, Chinese and foreign firms may be more likely to develop a complete contract *ex ante* and use formal control at the start of cooperation. We argue that even with a long history of international cooperation, Chinese and foreign firms involved in this relationship would not overlook the role of formal contracts. Thus:

**H1d.** The length of cooperation will not be associated with the use of formal control mechanisms in international buyer–supplier relationships.

## 2.2. Institutionalization and control mechanisms

Commonly known as the “rules of the game,” institutions are “humanly devised constraints that structure human interaction” (North, 1990: 3), and institutionalization refers to the emergence, articulation, and acceptance of certain institutions (Scott, 1995). Institutions constrain behavior. When the behavior of actors is inconsistent with (or deviates from) the institutional order, the mechanisms associated with institutions will increase the actors’ costs in various ways, including economic costs (increasing risk), cognitive costs (requiring more thought), and social costs (reducing legitimacy) (Peng et al., 2009; Phillips et al., 2004). The wider the institutions are accepted by actors in a field, the more costly such inconsistencies (or deviations) will be (Ingram and Clay, 2000).

In interfirm cooperation, institutionalization is conceptualized as a formalization process that cements the interfirm relationship above and beyond the interpersonal relationship between boundary spanners (Osborn and Hagedoorn, 1997). As the tenure of individual boundary spanners is usually shorter than the length of interfirm cooperation, this perspective contends that some institutionalization may inevitably emerge. Eventually, such institutionalization “would color all aspects of the relationship” (Ring and Van de Ven, 1994: 102).

Drawing on the institutional literature (Meyer et al., 2009; North, 1990; Peng, 2003; Peng et al., 2009; Scott, 1995), we posit that the institutionalization of buyer–supplier relationships may positively influence the use of social and formal control mechanisms in both international and domestic buyer–supplier relationships. Such institutionalization may boost the use of social control through cultivating interfirm trust (Nooteboom et al., 1997; Ring and Van de Ven, 1994). In brief, institutionalized beliefs and behavioral norms may help secure interfirm trust in “perpetuity” (Zaheer et al., 1998). When interfirm trust exists, social control mechanisms may be likely adopted. Thus:

**H2a.** Institutionalization of interfirm cooperation is positively associated with the use of social control mechanisms in both domestic and international buyer–supplier relationships.

We argue that institutionalization also exerts a positive influence on the use of formal control in both domestic and international buyer–supplier relationships. Some researchers suggest that it is usually too costly to draft complex contracts, especially under specific exchange conditions such as high levels of specific investments and environment uncertainty (Dyer and Singh, 1998; Gulati, 1995). The limited adaptability of formal contracts to deal with contingencies may impede their use in an uncertain environment (Poppo and Zenger, 2002). We suggest that well-developed relational norms, common values, and informal rules in buyer–supplier relationships may enable partners to develop complex contracts more effectively and efficiently. It is because: (1) well-developed relational norms, common values, and informal rules help minimize negotiation costs stemming from asset specificity and uncertainty by simplifying and smoothing the recurring negotiation process. (2) They endow partners with some degree of adaptability and flexibility to make adjustments to arrive at a mutually acceptable contract. (3) They allow partners to gain a better understanding of each other and thus to better predict partners’ behaviors (Heide and John, 1992). Formal contracts can be perceived as an extension of institutionalized rules, albeit with greater legal enforceability. Thus:

**H2b.** Institutionalization of interfirm cooperation is positively associated with the use of formal control mechanisms in both domestic and international buyer–supplier relationships.

## 2.3. Formal and social control: substitutes or complements?

Researchers who view formal and social control mechanisms as substitutes in explaining cooperation performance believe that the use of one control mechanism obviates the use of the other (Dyer and Singh, 1998). The reasoning is that social control based on concrete interfirm trust may govern interfirm exchange effectively (Uzzi, 1997). While formal control mechanisms may reduce the risk of opportunism, they may also result in high contracting costs (Gulati, 1995). Accordingly, if trust between partners is sufficiently strong to support the use of social control, the combined use of formal control mechanisms with social control mechanism could hardly be economical. Thus, some researchers assert that formal and social control mechanisms function as substitutes in explaining cooperation performance (Dyer and Singh, 1998; Gulati, 1995).

However, other researchers contend that social and formal control mechanisms may be complements (Luo, 2002; Poppo and Zenger, 2002; Zhou et al., 2003, 2008). By specifying the rights and duties of each partner, a well-designed contract provides a legal framework guiding the course of cooperation (Luo, 2002; Williamson, 2008). Conversely, social control mechanisms may remedy the inherent limitations of formal controls. Because it is not possible for managers to specify all future contingencies, contracts in and of themselves may be unable to maintain the continuity of cooperation when unanticipated disturbances arise (Uzzi, 1997). Given the complexities and uncertainties, even though trust exists, it may not necessarily reduce *ex ante* contract costs (Dyer and Chu, 2003). Social control mechanisms may then become a necessary complement to the adaptive limits of contracts (MacNeil, 1978). Given that the use of social control provides flexibility and fosters bilateralism, social control may interact positively with the use of formal control in explaining cooperation performance (Luo, 2002; Narasimhan et al., 2004; Poppo and Zenger, 2002). Interestingly, Poppo and Zenger’s (2002) speculation that their findings on the

complementary nature of formal and social control in a U.S. domestic context may not be generalizable to countries such as China is refuted by Luo (2002), who documents the complementary relationships between formal and social control in JVs based in China.

In our research context, we extend Luo (2002) and Poppo and Zenger (2002) further by arguing that formal and social control mechanisms are (1) substitutes in domestic buyer–supplier relationships and (2) complements in international buyer–supplier relationships. Domestically, social control mechanisms have governed exchanges in China for a long time and they may still be prevalent in the current business environment (Peng et al., 2008). Indeed, many researchers note that social means are perceived as more effective to govern interfirm cooperation in China (Lovett et al., 1999). While reliance on formal contracts exchange is also seen now as a feasible and prevalent approach to govern interfirm exchange (Li et al., 2008; Zhou et al., 2008), it may incur substantial costs in the current Chinese environment. Despite continuous reforms since 1979, the institutional environment in China is still relatively weak (Peng, 2003). When conflicts arise, local governments often dismiss contract laws and accommodate the desires of local firms with strong political connections. When laws are not enforced in a consistent manner but are subject to the “rule of man,” the legal institutions are perceived as not providing the level of stability and predictability required to support contracts (North, 1990). Hence, once trust is formed and can support the use of social control mechanisms, formal control mechanisms may be downplayed due to their high costs (Dyer and Singh, 1998). Moreover, although the use of formal control in interfirm exchange has recently acquired some legitimacy in China, the use of formal control may still exert a negative influence on interpersonal and interfirm trust (Zhou et al., 2003). At that point, the effectiveness of social control may be impaired (Carson et al., 2006). Hence:

**H3a.** The use of formal and social control mechanisms will function as substitutes in explaining cooperation performance in domestic buyer–supplier relationships.

However, the situation may be different in international buyer–supplier relationships. Because the development of social relationships with China is complex and takes a long time (Lovett et al., 1999), concrete interfirm trust in international cooperation, based on interpersonal relationships between boundary spanners, may be harder to establish and sustain than in domestic cooperation. Hence, it is very unlikely for Chinese or foreign firms to govern cooperation effectively through using social control mechanisms exclusively. In this setting, the formal contracts may provide a legally binding framework, and at the same time both Chinese and foreign firms may continue to explore social control to enhance flexibility, solidarity, and information exchange (Li et al., 2008; Lui and Ngo, 2004; Sawhney, 2006). Thus, the combination of formal and social control may achieve more effective governance in international cooperation than the exclusive use of either formal contracts or social means (Luo, 2002).

In contrast to the domestic situation, Chinese regulations governing international relationships tend to be much stronger (Peng, 2003: 287). The Foreign Economic Contract Law enacted in 1986 offers strict provisions on contract formation, enforcement, and termination when dealing with international interfirm relationships (Luo, 2002). At that point, the costs associated with the use of formal control would be lower in international cooperation. Correspondingly, Chinese and foreign firms may combine formal and social control to more effectively govern interfirm exchange. More interestingly, both Chinese and foreign partners may not view formal and social control as mutually

exclusive. According to Luo (2002), Chinese firms, when dealing with foreign (as opposed to domestic) partners, attach greater importance to formal contracts and tend to be much more serious in preparing contracts, even as they develop good interfirm trust with their foreign counterparts. Thus:

**H3b.** The use of formal and social control mechanisms will function as complements in explaining cooperation performance in international buyer–supplier relationships.

### 3. Methods

#### 3.1. Data and samples

Data used in this study were extracted from a large questionnaire data collection project. It used a relatively long instrument covering multiple topics, including innovation, interfirm cooperation, and strategy. Since Chinese managers generally lack adequate experience in participating in such research projects, we combined the interview approach and the survey approach in data collection. Specifically, in face-to-face meetings, our research assistants (RAs) asked the respondents questions and recorded their responses at the beginning (the interview approach). Then the RAs merely provided the instrument and answered any requests for clarification when the respondent mastered how to fill out the questionnaire (the survey approach). Responses took 90 min on average.

We drew our sample from government directories of firms in the manufacturing sector in China. Following Zaheer et al. (1998), we called the potential respondents to confirm (1) that their firms have at least six buyer–supplier relationships, and (2) that they were not large state-owned enterprises (SOEs) controlled directly by the central government that might exhibit some non-market-oriented characteristics not shared by other Chinese firms.<sup>4</sup> Based on the criteria, 850 firms were short-listed.

An introductory letter explaining our objectives and assuring confidentiality and access to our aggregated survey results was then sent to the 850 firms obtained from eight provincial/municipal government listings. These firms were located in the provinces (cities) of Guangdong (Shenzhen), Henan (Zhengzhou), Liaoning (Shenyang), Shaanxi (Xian and Baoji), Shandong (Qingdao and Jinan), Shanxi (Taiyuan), and Sichuan (Chengdu) as well as the Shanghai municipality. Six groups of RAs then contacted the firms to solicit participation. Of the 850 firms contacted, 607 agreed to participate. Arrangements were then made for meetings between our RAs and the CEOs and senior managers of the firms.

Although we had decided to dispatch RAs to visit each respondent firm, resource constraints prevented us from involving every boundary spanner associated with the focal buyer–supplier relationship in our survey. Instead, we chose to ask the CEO or the senior manager in charge of buyer–supplier relationships of each participating company to provide required information. To control for potentially confounding effects on relational governance caused by the importance of a particular partner and by the amount of purchases/sales made from it, we used a randomizing procedure to ask the managers to randomly

<sup>4</sup> We screened out the large SOEs controlled directly by the central government but not all SOEs. These excluded SOEs are usually very large conglomerates and operate in monopolized industries. These firms tend to be relatively insensitive to the market (Peng and Heath, 1996). Government interference heavily influences managerial decisions in these firms, including how to select and control their suppliers (Gao et al., 2008; Li et al., 2006; Ma et al., 2006; Su et al., 2009). Considering these relatively non-market-oriented characteristics of these SOEs controlled by the central government, we excluded these SOE in our data collection efforts.

**Table 1**  
Ownership and size of sampled firms.

	Guangdong	Henan	Liaoning	Sichuan	Shandong	Shanghai	Shanxi	Shaanxi	Total
Sample size	93	153	52	48	96	29	42	67	580
Ownership (%)									
State <sup>a</sup>	17.2	30.7	30.8	22.9	20.8	17.2	47.6	25.8	26.2
Collective	1.1	4.60	3.80	4.20	9.4	0.00	0.00	3.00	4.20
Hybrid	47.3	51.0	44.3	52.1	52.1	62.1	42.8	53.0	50.0
Private	16.1	6.50	13.5	14.6	16.7	6.90	2.4	14.2	12.8
Other	18.3	7.20	7.60	6.20	1.00	13.8	7.2	4.00	6.80
Firm size <sup>b</sup> (%)									
Large	28.0	26.1	53.8	39.6	27.1	43.3	54.7	33.3	34.0
Medium	39.8	57.6	28.8	39.6	39.6	33.3	31.0	51.5	43.8
Small	32.2	16.3	17.4	20.8	33.3	23.4	14.3	15.2	22.2

<sup>a</sup> Large SOEs controlled directly by the central government were not sampled. Only small and medium-sized SOEs were sampled.

<sup>b</sup> The classification is based on official Chinese government standard.

select a particular buyer–supplier relationship from the four most important relationships, and to answer our survey questions based on that chosen buyer–supplier relationship (Zaheer et al., 1998).

Before the RAs were dispatched, they went through 10 h of training on the main objectives of this study, the interviewing techniques, and the exact meaning of each question in the questionnaire. With the assistance from RAs, respondents could have their doubts clarified immediately, thus minimizing any misinterpretation of the questions. It also circumvented one common problem associated with the mail questionnaire method, the questionnaire is often being delegated to some junior officer or secretary to answer (if it is answered at all). Following their training, the RAs conducted a pilot test with 15 firms in Shaanxi province in the presence of a trainer. A debriefing was held to improve data collection techniques and clarify some wording in the survey instrument.

Each of the six groups of RAs was allocated to approximately 100 firms to conduct data collection activities. Efforts were made to assign firms within the same location to each RA to minimize their travel. Data were collected over a period of six months during 2002. Of the 607 respondents who agreed to participate, 27 did not provide complete information. This resulted in a total of 580 usable responses, involving 380 domestic and 200 international buyer–supplier relationships. The overall response rate was 68% (580/850). Of the valid responses, over 70% were provided by top managers and executives. The minimum length for a relationship to be included was one year. The longest running domestic and international relationships were 40 and 22 years, respectively. Basic statistics are in Table 1.

To check potential non-response bias, we compared the size of responding and non-responding firms. Our *t*-tests found no significant difference between these two groups ( $t$ -value = 0.042,  $p$  = 0.967), suggesting little threat of non-response bias. To assess potential single-respondent bias, we selected two managers in each of 20 respondent firms and then interviewed them separately with the same questionnaire. For practical reasons, these 20 firms were selected due to their geographic proximity to the university of the Chinese authors of our research team. The reliability test suggested a high level of internal consistency between two sets of answers. In addition, we examined the possibility of common method variance via Harman's one-factor test for all variables used (Podsakoff and Organ, 1986). Significant common method variances would result in one general factor accounting for the majority of covariance in the variables. We performed factor analysis on items related to the dependent and independent variables. No general factor was

apparent in the unrotated factor structure, with the first factor accounting for less than 25% of total variance and the independent and dependent variables loading on different factors. Thus, common method variance was unlikely to be serious.

### 3.2. Variables and measurement

Where possible, validated instruments from the literature were used or adapted. In the absence of any existing scale, new items were created based on the literature and refined by our pilot test. Questionnaire items, unless stated otherwise, were measured using a seven-point scale in which “1” represented “low degree” and “7” represented “high degree” (see Appendix A). Table 2 presents the means and correlations for each of the measures used in our survey.

#### 3.2.1. The length of cooperation

This measure was operationalized as the number of years the two parties have cooperated in a buyer–supplier relationship (Dyer and Chu, 2000).

#### 3.2.2. Institutionalization

There are very few validated operationalizations of this construct in survey-based studies. Based on the spirit of Boddy et al.'s (2000) qualitative study and Ingram and Inman's (1996) survey work, we developed a four-item interfirm institutionalization construct: (1) whether a comprehensive set of norms of action has been well developed in the cooperation, (2) whether a binding set of rules for both firms has been created, (3) whether both firms have a mutual understanding of each other's organizational culture, values, and operations, and (4) whether both firms share a common vision and ambition for the cooperative venture in the previous one year. These relatively novel measures were pretested in our pilot study prior to their deployment in our large-sample survey.

#### 3.2.3. Social and formal control mechanisms

Based on Fryxell et al. (2002) and Jap and Ganesan (2000), the measures of formal control mechanisms concentrated on the completeness and importance of contracts. The measures included: (1) the contract precisely defines the role/responsibilities of the partner and our firm. (2) The contract precisely states how each party is to perform in cooperation. (3) The contract is a primary mechanism to regulate the behavior of the partner in cooperation. Social control mechanisms were assessed by asking the respondents to indicate whether control was exercised through (1) reliance on the partner to keep promises, (2) participatory

**Table 2**  
Variable means, standard deviations, and correlations.

Variables	Mean	S. D.	1	2	3	4	5	6	7	8
<b>(a) Domestic buyer–supplier relationships<sup>a</sup></b>										
1 The length of cooperation	6.98	6.35	1							
2 Institutionalization	5.16	0.86	.151**	1						
3 Social control mechanisms	4.95	0.98	.054	.544***	1					
4 Formal control mechanisms	4.56	1.05	.166**	.401***	.220***	1				
5 Performance	5.23	1.00	.152**	.498***	.657***	.229***	1			
6 Partner size	1.71	0.70	-.246**	-.180**	-.032	-.137**	-.152**	1		
7 Interdependence	4.49	1.13	-.025	.238***	.236***	.383***	.261***	-.025	1	
8 Location	1.84	.720	.093	-.028	.020	.083	.016	-.099	.084	1
<b>(b) International buyer–supplier relationships<sup>b</sup></b>										
1 The length of cooperation	6.49	4.66	1							
2 Institutionalization	5.07	1.02	.126†	1						
3 Social control mechanisms	4.94	1.04	.104	.696***	1					
4 Formal control mechanisms	4.71	1.22	.004	.522***	.236***	1				
5 Performance	5.22	1.02	.065	.681***	.694***	.318***	1			
6 Partner size	1.48	0.58	-.079	-.069	-.095	-.048	-.174	1		
7 Interdependence	4.43	1.31	.041	.465***	.426***	.356***	.358***	-.001	1	
8 Location	1.77	0.74	-.045	-.045	-.019	-.014	.057	-.011	.139†	1

<sup>a</sup> N=200.  
<sup>b</sup> N=380.  
<sup>†</sup> p < .1.  
<sup>\*</sup> p < .05.  
<sup>\*\*</sup> p < .01.  
<sup>\*\*\*</sup> p < .001.

decision-making, (3) joint problem solving, and (4) fine-grained information exchange.

**3.2.4. Cooperation performance**

In order to test whether formal and social control are substitutes or complements in explaining cooperation performance, we need to measure cooperation performance. According to Saxton (1997), the performance of cooperation can be measured by the firm’s satisfaction about the outcomes of cooperation. Thus, we operationalized performance of cooperation with a three-item measure scale: (1) Overall, we are satisfied with the performance of this cooperation. (2) The cooperation has realized the goals we set out to achieve. (3) The cooperation has contributed to our core competencies and competitive advantage.

**3.2.5. Control variables**

Since the decision regarding the use of control mechanisms may depend on the enforceability of contracts and the efficacy of the legal system varies greatly from region to region, we controlled for maturity of the legal environment by using a three-point ordinal scale. Specifically, 1 is the most mature legal environment and 3 is the least mature (1 = Guangdong, Shandong, and Shanghai; 2 = Liaoning, Shanxi, and Henan; 3 = Shaanxi and Sichuan).

We controlled for interdependence between partner firms because a high degree of interdependence may lead to the use of both social and formal controls since both firms have a vested interest in making sure that the relationship works (Dyer and Singh, 1998). The interdependence between partners is measured by a two-item scale (Lusch and Brown, 1996): (1) we are dependent on the partner, and (2) the partner is dependent on us. We also controlled for partner size. Based on the official government classification, partner size was measured using a three-point ordinal scale: 1 = large, 2 = medium, and 3 = small.

**3.3. Validation of measures**

Confirmatory factor analysis (CFA) was used to validate the measures. As our sample size for domestic cooperation exceeds

the criterion of 200 required for structural equation modeling, we tested for overall model fitness by applying the alternative rule of requiring the Chi-square value to be less than five times the degrees of freedom (Wheaton et al., 1977). The ratio between Chi-square and degree of freedom are 3.02 and 2.02 for domestic and international buyer–supplier relationships, respectively (Chi-square is 215.1 for domestic and is 143.45 for international buyer–supplier relationships. Degree of freedom is 71). Thus, the measurement model demonstrates an acceptable level of fitness. Additionally, root mean square error of approximation values (RMSEA) of the model are 0.073 for domestic and 0.072 for international cooperation, which show a reasonable fitness of the model (Hair et al., 2006). The values of good fitness index (GFI) of model are 0.92 and 0.90 for domestic and international cooperation, respectively. Construct reliability and the Cronbach alpha of each construct are also 0.75 or greater, exceeding the benchmark criteria of 0.7 (Nunnally and Bernstein, 1994). All the indicators load significantly on their hypothesized factors (p < 0.001).

Overall, our constructs demonstrate relatively strong convergent validity and all the manifest indicators are significant and reliable measures of the latent constructs being used. To test for discriminant validity, we conducted a series of nested CFA model comparisons in which we constrained the covariance between each pair of reflective constructs to one (Anderson and Gerbing, 1988). For each of the pairs, we compared the Chi-square of the constrained model with a free model, and found the difference to be statistically significant, which indicates adequate discriminant validity.

**3.4. Analytic method**

We propose that the length of cooperation and institutionalization would influence the use of control mechanisms, and further argue that the interaction between control mechanisms will influence cooperation performance. Thus, the use of formal and social control mechanisms constructs are both independent and endogenous variables. In order to perform the data analysis in a single structural model, we chose the structural equation modeling (SEM) method because of its ability to estimate a series of

**Table 3**  
Formal and social control mechanisms in domestic and international buyer–supplier relationships.

	Model 1			Model 2		
	Domestic buyer–suppliers relationships			International buyer–suppliers relationships		
	Social control	Formal control	Performance	Social control	Formal control	Performance
<b>Independent variables</b>						
The length of cooperation	0.026	0.167**		0.132*	−0.065	
Institutionalization	0.515***	0.16*		0.634***	0.477***	
Social control			0.843***			0.693***
Formal control			0.063			−0.009
Interaction			−0.213*			−0.129
<b>Control variables</b>						
Location	−0.008	0.017		0.053	−0.028	
Interdependence	0.185***	0.387***		0.151	0.165*	
Size of partner firm			−0.170**			−0.033
<b>Model fitness</b>						
Chi-square/d.f.		1.148			1.184	
p-Value		0.098			0.055	
GFI/AGFI		0.960/0.935			0.920/0.876	
IFI		0.991			0.989	
TLI		0.987			0.984	
CFI		0.991			0.989	

The entries in the table are standardized path coefficients.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

dependence relationships, wherein one dependent variable becomes the explanatory variable in subsequent relationships. It also allows researchers to assess the impact of explanatory variables on two or more dependent variables at the same time (Hair et al., 2006). The data analyses were performed using Amos software.

In order to explore the relationship between formal and social control, we needed to test the interaction effect between latent variables (i.e., formal and social control mechanisms) with the SEM method. Kenny and Judd (1984) recommend using products of indicators to specify the interaction construct in a structural equation model to test for the interaction effect. We adopted this approach and added an interaction construct in the testing model. The indicators of the interaction construct are the product of the indicators of formal and social control mechanisms. The path coefficient between the latent construct and cooperation performance reflects how formal and social control mechanisms interact with each other (Hair et al., 2006).

#### 4. Results

Table 3 presents our estimations. In H1a, we hypothesize that the length of cooperation is positively associated with the use of social control in domestic buyer–supplier relationships. The positive impact is not significant in the domestic context (structural model 1:  $p > 0.05$ ). Thus, H1a is not supported. In H1b, we predict that the length of cooperation is positively associated with the use of social control in international buyer–supplier relationships. The result shows that the impact is positive and significant (structural model 2:  $p < 0.05$ ). Therefore, H1b is supported.

In H1c, we expect the length of cooperation to correlate positively with the use of formal control mechanisms in domestic buyer–supplier relationships. Our results support H1c, because the impact of the length of cooperation on formal control mechanisms is positive and significant in domestic relationships (Model 1:  $p < 0.01$ ). In H1d, we expect no significant association between the length of cooperation and the use of formal control mechanisms in international relationships. The path coefficient is not significant (model 2:  $p > 0.05$ ), and hence supports H1d.

In H2a and H2b, we expect the institutionalization of cooperation to boost the use of social control mechanisms and formal control mechanisms simultaneously. Our results support both hypotheses. The impact of institutionalization on the use of social control mechanisms is positive and significant in both domestic (model 1:  $p < 0.001$ ) and international (model 2:  $p < 0.001$ ) relationships. The positive correlation between institutionalization and the use of formal control is also significant in both domestic (model 1:  $p < 0.01$ ) and international (model 2:  $p < 0.05$ ) relationships.

Next, we investigate whether formal and social control mechanisms function as substitutes or complements in explaining cooperation performance, by examining the path coefficients of the interaction variable on cooperation performance. In H3a, we suggest that formal and social control mechanisms function as substitutes in domestic buyer–supplier relationships. The negative impact of the interaction variable (model 1:  $b = -0.213$ ,  $p < 0.05$ ) is significant, thus supporting H3a. In H3b, we predict formal and social control mechanisms to complement each other in international buyer–supplier relationships. The path coefficient of the interaction variable on cooperation performance is negative but not significant. Thus, our results do not support H3b. Instead, our findings suggest that formal control and social control are neither pure substitutes nor complements in international buyer–supplier relationships in China.

#### 5. Discussion and contributions

##### 5.1. Discussion

The study examines the antecedents of formal and social control and their relations in explaining cooperation performance in both domestic and international buyer–supplier relationships. Overall, we find support for six out of eight hypotheses in our model.

The test results of H1a and H1b suggest that the influence of the length of cooperation on the use of social control mechanisms is positive and significant in international cooperation, but insignificant in domestic cooperation. We argue that the insignificant result exists in domestic cooperation because Chinese firms prefer



to initiate economic exchanges on the basis of mutual trust (Peng, 2003). If concrete trust is in place, subsequent cooperation experience may not alter the strength of trust and boost the use of social control significantly. In the existing literature, researchers have contended that cooperation experience supports the use of social control by facilitating the formation of trust (Gulati, 1995; McEvily et al., 2003). Our study provides empirical evidence to this proposed correlation and further suggests that the correlation is contingent on the type of cooperation.

Our results also support H1c and H1d, which suggest that the correlation between the length of cooperation and the use of formal control is positive and significant in domestic cooperation, but insignificant in international cooperation. Traditionally, scholars believe that formal control would be less important when social relationships are strong in cooperation (Dyer and Singh, 1998; Gulati, 1995). However, some recent studies have argued that social relations are necessary to support the use of contracts in cooperation (Luo, 2002; Poppo and Zenger, 2002; Zhou et al., 2003). By using the length of cooperation as a proxy of social relations between partners, the current study supports and extends the more recent view. Going beyond previous findings, we show that on the one hand, in domestic buyer–supplier relationships, social relations do support the use of contractual mechanisms. On the other hand, the relationship is contingent on the type of cooperation. In international cooperation, there is no significant relationship between the length of cooperation and the use of formal control.

The test results of H2a and H2b indicate that institutionalization of cooperation boosts the use of social and formal control mechanisms in both domestic and international cooperation. In the existing literature, researchers have suggested the importance of institutional view in explaining the behavior pattern of a firm in structuring economic exchanges with other independent firms (Osborn and Hagedoorn, 1997; Peng et al., 2008, 2009). Although some researchers have argued that formal institutional environment influences the adoption of control mechanisms in economic exchanges (Zhou et al., 2003), our study provides additional support to the importance of the institutional view by showing that institutionalized norms, values, and beliefs emerged from cooperation (i.e., informal institutions) exert a significant impact on the use of control mechanisms.

Traditionally, TCE has been adopted as a primary theoretical lens to explore the antecedents of control mechanisms in interfirm cooperation. Our study provides empirical evidence on the explanatory and predictive power of both social network theory and institutional view in explaining the adoption of control mechanisms in economic exchanges. In addition, we find that the influences of institutionalization on control mechanisms are significant and identical in domestic and international contexts, while the influence of the length of cooperation on control mechanisms differs greatly between domestic and international cooperation. Thus, we speculate that the institutional view may provide stable insights on the use of control mechanisms in various types of buyer–supplier relationships. In contrast, the explanatory and predictive power of social network theory might be contingent on characteristics of national culture, business paradigm, and legal environment (Lin et al., 2009).

Another question dealt with in the study is the relationship between formal and social control in explaining cooperation performance. Our results show that formal and social control mechanisms are substitutes in domestic cooperation, but have an insignificant relationship in international buyer–supplier relationships. This insignificant interaction may be caused by the inclination of Chinese managers treating strict formal control as a signal of distrust between partners, and the preference of Western managers insisting on original formal agreements as a

basic framework to govern interfirm cooperation (Lovett et al., 1999). If social control cannot alter the content and enforcement of contracts, it may not improve the effectiveness of formal control. Joining the findings of Poppo and Zenger (2002), our study suggests that there is a *continuum* between complements and substitutes: formal and social control mechanisms are substitutes in Chinese domestic cooperation, complements in U.S. domestic cooperation, and neither substitutes nor complements in international buyer–supplier relationships in China.

## 5.2. Contributions

At least three contributions emerge. First, we theoretically articulate a view suggesting that both the length of cooperation and institutionalization have a bearing on the use of certain control mechanisms. Most existing studies on the antecedents of control mechanisms focus primarily on TCE (Poppo and Zenger, 2002; Williamson, 2008). Following Lin et al. (2009), Madhok (2002), Peng et al. (2008, 2009), White and Lui (2005), and Zhou et al. (2003), we invoke social network theory and the institutional view to build a model to investigate the impact of the length of cooperation and institutionalization on the use of control mechanisms. By conducting an empirical study in China, we find that institutionalization exerts a positive influence on the use of social and formal control both in domestic and international buyer–supplier relationships. However, the length of cooperation only facilitates the use of formal control mechanisms in domestic cooperation, and boosts the use of social control in international cooperation. The results highlight the explanatory and predictive power of social network and institutional factors in interfirm cooperation.

Second, we contribute to the debate on the nature of formal control and social control as “substitutes versus complements”. This is one of few empirical efforts to systematically cover both types of domestic and international relationships, whereas previous work has typically only looked at one type (either domestic or international). With our comprehensive sample, we are able to document that formal control and social control are mutually substitutable in domestic buyer–supplier relationships, but their interactions cannot be described as simply either complementary or substitutable in international buyer–supplier relationships.

Finally, our findings directly speak to and differ from the recent work of Poppo and Zenger (2002) and Luo (2002). Traditionally, much theoretical research has argued for the substitute relationship between the use of formal and social control mechanisms. Our study supports this substitute perspective in the context of Chinese domestic buyer–supplier relationships. This is different from Poppo and Zenger (2002), who find the use of social and formal control mechanisms to be complementary between U.S. domestic firms. This difference suggests that the relationship between formal and social control may be moderated by the cultural and institutional environment of the cooperation. Clearly, Chinese firms prefer to use one type of control mechanism at the expense of the other when cooperating domestically. In other words, our findings support Poppo and Zenger’s (2002: 722) speculation that their findings on the complementarity between formal and social control in the United States may not be generalizable to China or specifically, domestic buyer–supplier relationships in China.

In addition, our findings also add to and differ from Luo (2002), who finds that the use of formal and social control mechanisms is complementary in IJVs in China. There are two possible explanations for this difference. First, Luo’s context is IJVs while ours is buyer–supplier relationships. Chinese partners in IJVs may be more experienced in contracting than Chinese firms involved in

buyer–supplier relationships. Second, our sample is geographically different from Luo's sample, which comes from Jiangsu, Shandong, Shanghai, and Zhejiang. Firms in these four coastal provinces have a relatively longer history of market liberalization, and are likely to have more international experience than firms in our sample, which include several inland provinces with limited experience in dealing with foreign firms. Overall, our findings extend the work of Poppo and Zenger (2002) and Luo (2002) by providing a more nuanced and in-depth understanding of the relationship between the two types of control mechanisms.

### 5.3. Limitations and future research directions

Three theoretical, methodological, and geographic limitations suggest a variety of future research directions. Theoretically, we have emphasized the social network and institutional dimensions of buyer–supplier relationships to complement the wealth of interfirm cooperation research that often draws on TCE. It may be useful for future research to assess the relative weight of these different theoretical factors in one study (Zhou et al., 2003). Further, given the transitions in the Chinese economy, our data, collected in 2002, captured essentially a snapshot in the evolution of buyer–supplier relationships. Unfortunately, the cross-sectional nature of our data does not allow us to theorize and test how cultural norms and business practices in China have changed concerning buyer–supplier relationships since 2002. Clearly, future research connecting different data points in time through a longitudinal design will be beneficial (Peng, 2003).

Methodologically, we have only focused on one specific buyer–supplier relationship. Obviously, replications of our study in other cooperative interfirm relationships (such as IJVs and domestic JVs) are needed to establish the external validity of our findings. As in many other large-sample surveys on buyer–supplier relationships, we too only have had one-sided responses because of limited resources. Ideally, it would be beneficial to obtain the assessment of both partners in each relationship. Further, we only have the size variable to test the existence of non-response bias. Additional demographic variables will be valuable to probe into whether the non-response bias is significant.

Geographically, limiting our study to China, while removing cross-country differences, leaves open the question how generalizable our findings are (Jiang et al., 2007; Meyer et al., 2009; Zhao et al., 2007). While the substitution between formal and social control in domestic buyer–supplier relationships may be found in other more collectivist countries such as Japan (Dyer and Chu, 2003; McGuire and Dow, 2009), it may not be the case in other

Asian countries. Moreover, given that China itself is undergoing rapid transitions (Keister, 2009; Peng, 2003) and its legal framework, although still primitive by Western standards, is improving significantly (especially in the sector dealing with foreign firms), contractual clauses may change, representing another fruitful area for future research. It remains to be seen in future research whether our China-based findings can be found in other emerging Asian economies such as India or Vietnam (Li and Peng, 2008; Zhan et al., 2009).

## 6. Conclusion

This article has examined the antecedents and nature of formal and social control mechanisms in both domestic and international buyer–supplier relationships in China. With reliable and robust survey evidence collected nationwide with executives involved in 580 buyer–supplier relationships, we find that the length of cooperation and institutionalization are important determinants of the use of control mechanisms in both domestic and international buyer–supplier cooperation. However, the length of cooperation exerts different influences on the use of control mechanisms in domestic and international buyer–supplier relationships. In contrast, institutionalization facilitates both the use of social and formal control in domestic and international buyer–supplier relationships in China. In addition, while formal control and social control substitute each other in domestic relationships, formal and social control mechanisms function neither as pure complements nor as substitutes in buyer–supplier relationships involving Chinese and foreign firms. In conclusion, not only the antecedents such as the length of cooperation and institutionalization have differentiated impacts on the choice of control mechanisms in domestic and international buyer–supplier relationships, but the nature of the relationship between formal and social control also differs significantly.

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## Appendix A. List of major survey items

Note: Respondents used a seven-point Likert scale to provide responses on each item, such that '1 = strongly disagree' and '7 = strongly agree'.

	Key references
(a) Independent variables	
<i>Social control mechanisms</i>	
Please indicate whether control was currently exercised through:	Fryxell et al. (2002), Jap and Ganesan (2000)
1. Reliance on the partner to keep promises	
2. Participatory decision-making	
3. Joint problem solving	
4. Fine-grained information exchange	
<i>Formal control mechanisms</i>	
1. The contract precisely defines the role/responsibilities of the partner and our firm	Fryxell et al. (2002), Jap and Ganesan (2000)
2. The contract precisely states how each party is to perform in cooperation	
3. Generally, the contract is a primary mechanism to regulate the behavior of the partner in cooperation	
<i>Institutionalization</i>	
1. Whether a comprehensive set of norms of action has been well developed in the cooperation	Boddy et al. (2000), Ingram and Inman (1996)
2. Whether a binding set of rules for both firms has been created	
3. Whether both firms have a mutual understanding of each other's organizational culture, values, and operations	
4. Whether both firms share a common vision and ambition for the cooperative venture	
<i>The length of cooperation</i>	
The buyer–supplier relation has been in place for: (years)	
(b) Dependent variables	
<i>Performance of cooperation</i>	
1. Overall, we are satisfied with the performance of this cooperation	Saxton (1997)
2. The cooperation has realized the goals we set out to achieve	
3. The alliance has contributed to our core competencies and competitive advantage	
(c) Controls	
<i>Interdependence</i>	
1. We are dependent on the partner	Lusch and Brown (1996)
2. The partner is dependent on us	

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