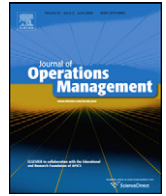




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## Formal control and social control in domestic and international buyer–supplier relationships

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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). It 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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55 Madhok (2002) and White and Lui (2005) to suggest that TCE may  
 56 be relatively narrow to adequately account for how firms choose  
 57 formal or social control in interfirm relationships. According to  
 58 Zhou et al. (2003), three logics underlie the behaviors of firms in  
 59 economic exchanges: (1) transactions costs, (2) social relations,  
 60 and (3) institutional constraints. Thus, in addition to TCE, social  
 61 network theory and institutional view may also provide helpful  
 62 insights on the adoption of control mechanisms in interfirm  
 63 exchanges (Lin et al., 2009).

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

76 With respect to the second question, some authors argue that  
 77 formal control and social control mechanisms are substitutes (Dyer  
 78 and Singh, 1998; Ghoshal and Moran, 1996; Gulati, 1995; Uzzi,  
 79 1997). However, others suggest that formal and social control  
 80 mechanisms are complementary in explaining cooperation per-  
 81 formance (Luo, 2002; Mesquita and Brush, 2008; Poppo and  
 82 Zenger, 2002; Wuyts and Geyskens, 2005). These conflicting views,  
 83 thus, necessitate further investigation. We posit that the type of  
 84 cooperation – domestic versus international – would influence this  
 85 relationship. For example, Poppo and Zenger (2002: 722), who  
 86 study domestic firms in the United States, speculate that “our  
 87 notion of complements is not likely to generalize to countries that  
 88 lack a cultural and legal commitment to the use of formal  
 89 contracts.” However, in China, a country widely believed to be  
 90 lacking in legal commitment to the use of formal contracts (Peng  
 91 and Heath, 1996), Luo (2002) reports that some of the Poppo and  
 92 Zenger (2002) findings on the complementary nature of formal  
 93 control and social control can also be generalized to a sample of  
 94 international joint ventures (IJVs). Specifically, Luo (2002) finds  
 95 that term specificity and contingency adaptability of formal  
 96 contract between partners interact positively with social control  
 97 in explaining IJV performance. Extending this line of research, we  
 98 argue that in China, the relationship between formal control and  
 99 social control in domestic and international relationships may be  
 100 different. Specifically, formal control and social control may  
 101 function as substitutes in domestic relationships, and as comple-  
 102 ments in international relationships. Following Li et al. (2008), we  
 103 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–sup-  
 plier 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 complete-  
 ness 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

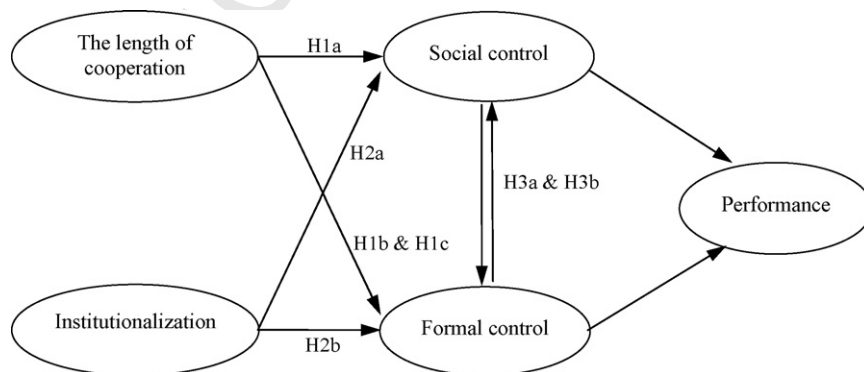


Fig. 1. Our research framework.

(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 the 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 their 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 Chinese traditional 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.

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

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

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

## 309 2.2. Institutionalization and control mechanisms

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

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

332 Drawing on the institutional literature (Meyer et al., 2009;  
333 North, 1990; Peng, 2003; Peng et al., 2009; Scott, 1995), we posit  
334 that the institutionalization of buyer–supplier relationships may  
335 positively influence the use of social and formal control mecha-  
336 nisms in both international and domestic buyer–supplier rela-  
337 tionships. Such institutionalization may boost the use of social control  
338 through cultivating interfirm trust (Nooteboom et al., 1997; Ring  
339 and Van de Ven, 1994). In brief, institutionalized beliefs and  
340 behavioral norms may help secure interfirm trust in “perpetuity”  
341 (Zaheer et al., 1998). When interfirm trust exists, social control  
342 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.

347 We argue that institutionalization also exerts a positive  
348 influence on the use of formal control in both domestic and  
349 international buyer–supplier relationships. Some researchers  
350 suggest that it is usually too costly to draft complex contracts,  
351 especially under specific exchange conditions such as high levels of  
352 specific investments and environment uncertainty (Dyer and  
353 Singh, 1998; Gulati, 1995). The limited adaptability of formal  
354 contracts to deal with contingencies may impede their use in an  
355 uncertain environment (Poppo and Zenger, 2002). We suggest that  
356 well-developed relational norms, common values, and informal  
357 rules in buyer–supplier relationships may enable partners to  
358 develop complex contracts more effectively and efficiently. It is  
359 because: (1) well-developed relational norms, common values, and  
360 informal rules help minimize negotiation costs stemming from  
361 asset specificity and uncertainty by simplifying and smoothing the  
362 recurring negotiation process. (2) They endow partners with some  
363 degree of adaptability and flexibility to make adjustments to arrive  
364 at a mutually acceptable contract. (3) They allow partners to gain a  
365 better understanding of each other and thus to better predict  
366 partners’ behaviors (Heide and John, 1992). Formal contracts can  
367 be perceived as an extension of institutionalized rules, albeit with  
368 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.

## 373 2.3. Formal and social control: substitutes or complements?

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

387 However, other researchers contend that social and formal  
388 control mechanisms may be complements (Luo, 2002; Poppo and  
389 Zenger, 2002; Zhou et al., 2003, 2008). By specifying the rights and  
390 duties of each partner, a well-designed contract provides a legal  
391 framework guiding the course of cooperation (Luo, 2002; William-  
392 son, 2008). Conversely, social control mechanisms may remedy the  
393 inherent limitations of formal controls. Because it is not possible  
394 for managers to specify all future contingencies, contracts in and of  
395 themselves may be unable to maintain the continuity of  
396 cooperation when unanticipated disturbances arise (Uzzi, 1997).  
397 Given the complexities and uncertainties, even though trust exists,  
398 it may not necessarily reduce *ex ante* contract costs (Dyer and Chu,  
399 2003). Social control mechanisms may then become a necessary  
400 complement to the adaptive limits of contracts (MacNeil, 1978).  
401 Given that the use of social control provides flexibility and fosters  
402 bilateralism, social control may interact positively with the use of  
403 formal control in explaining cooperation performance (Luo, 2002;  
404 Narasimhan et al., 2004; Poppo and Zenger, 2002). Interestingly,  
405 Poppo and Zenger’s (2002) speculation that their findings on the  
406 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 IJVs 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.** In domestic buyer–supplier relationships, the use of formal and social control mechanisms will function as substitutes in explaining cooperation performance.

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.

<sup>4</sup> We thank Morgan Swink (Editor-in-Chief), associate editor, and two reviewers for excellent editorial guidance. Li and Xie’s work has been supported in part by the National Natural Science Foundation of China (NSFC, 70802048). Peng acknowledges support from the National Science Foundation of the United States (CAREER SES 0552089) and the Provost’s Distinguished Professorship at the University of Texas at Dallas. All views and errors are ours and are not those of the funding organizations. 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. 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 <sup>a</sup> (%)									
State	17.2	30.7	30.8	22.9	20.8	17.2	47.6	25.8	26.2
Collective	1.10	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.

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

516 Although we had decided to dispatch RAs to visit each  
517 respondent firm, resource constraints prevented us from involving  
518 every boundary spanner associated with the focal buyer–supplier  
519 relationship in our survey. Instead, we chose to ask the CEO or the  
520 senior manager in charge of buyer–supplier relationships of each  
521 participating company to provide required information. To control  
522 for potentially confounding effects on relational governance  
523 caused by the importance of a particular partner and by the  
524 amount of purchases/sales made from it, we used a randomizing  
525 procedure to ask the managers to randomly select a particular  
526 buyer–supplier relationship from the four most important  
527 relationships, and to answer our survey questions based on that  
528 chosen buyer–supplier relationship (Zaheer et al., 1998).

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

542 Each of the six groups of RAs was allocated to approximately  
543 100 firms to conduct data collection activities. Efforts were made  
544 to assign firms within the same location to each RA to minimize  
545 their travel. Data were collected over a period of six months during  
546 2002. Of the 607 respondents who agreed to participate, 27 did not  
547 provide complete information. This resulted in a total of 580 usable  
548 responses, involving 380 domestic and 200 international buyer–  
549 supplier relationships. The overall response rate was 68% (580/  
550 850). Of the valid responses, over 70% were provided by top  
551 managers and executives. The minimum length for a relationship  
552 to be included was one year. The longest running domestic and  
553 international relationships were 40 and 22 years, respectively.  
554 Basic statistics are in Table 1.

555 To check potential non-response bias, we compared the size of  
556 responding and non-responding firms. Our *t*-tests found no  
557 significant difference between these two groups (*t*-value = 0.042,  
558 *p* = 0.967), suggesting little threat of non-response bias. To assess  
559 potential single-respondent bias, we selected two managers in  
560 each of 20 respondent firms and then interviewed them separately  
561 with the same questionnaire. For practical reasons, these 20 firms  
562 were selected due to their geographic proximity to the University  
563 of the Chinese authors of our research team. The reliability test

suggested a high level of internal consistency between two sets of  
564 answers. In addition, we examined the possibility of common  
565 method variance via Harman's one-factor test for all variables used  
566 (Podsakoff and Organ, 1986). Significant common method  
567 variances would result in one general factor accounting for the  
568 majority of covariance in the variables. We performed factor  
569 analysis on items related to the dependent and independent  
570 variables. No general factor was apparent in the unrotated factor  
571 structure, with the first factor accounting for less than 25% of total  
572 variance and the independent and dependent variables loading on  
573 different factors. Thus, common method variance was unlikely to  
574 be serious.  
575

### 3.2. Variables and measurement 576

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

#### 3.2.1. The length of cooperation 585

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

#### 3.2.2. Institutionalization 589

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

#### 3.2.3. Social and formal control mechanisms 603

604 Based on Fryxell et al. (2002) and Jap and Ganesan (2000), the  
605 measures of formal control mechanisms concentrated on the  
606 completeness and importance of contracts. The measures

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

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 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

**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>Independents</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.

\*  $p < .05$ .  
\*\*  $p < .01$ .  
\*\*\*  $p < .001$ .

682 endogenous variables. In order to perform the data analysis in a  
683 single structural model, we chose the structural equation modeling  
684 (SEM) method because of its ability to estimate a series of  
685 dependence relationships, wherein one dependent variable  
686 becomes the explanatory variable in subsequent relationships. It  
687 also allows researchers to assess the impact of explanatory  
688 variables on two or more dependent variables at the same time  
689Q1 (Hair et al., 1998). The data analyses were performed using Amos  
690 software.

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

#### 703 4. Results

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

714 In H1c, we expect the length of cooperation to correlate  
715 positively with the use of formal control mechanisms in domestic  
716 buyer–supplier relationships. Our results support H1c, because the  
717 impact of the length of cooperation on formal control mechanisms  
718 is positive and significant in domestic relationships (model 1:

719  $p < 0.01$ ). In H1d, we expect no significant association between the  
720 length of cooperation and the use of formal control mechanisms in  
721 international relationships. The path coefficient is not significant  
722 (model 2:  $p > 0.05$ ), and hence supports H1d.

723 In H2a and H2b, we expect the institutionalization of  
724 cooperation to boost the use of social control mechanisms and  
725 formal control mechanisms simultaneously. Our results support  
726 both hypotheses. The impact of institutionalization on the use of  
727 social control mechanisms is positive and significant in both  
728 domestic (model 1:  $p < 0.001$ ) and international (model 2:  
729  $p < 0.001$ ) relationships. The positive correlation between insti-  
730 tutionalization and the use of formal control is also significant in  
731 both domestic (model 1:  $p < 0.01$ ) and international (model 2:  
732  $p < 0.05$ ) relationships.

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

#### 748 5. Discussion and contributions

##### 749 5.1. Discussion

750 The study examines the antecedents of formal and social  
751 control and their relations in explaining cooperation performance  
752 in both domestic and international buyer–supplier relationships.  
753 Overall, we find support for six out of eight hypotheses in our  
754 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 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 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

885 complementary in IJVs in China. There are two possible explanations for this difference. First, Luo's context is IJVs while ours is  
 886 buyer-supplier relationships. Chinese partners in IJVs may be  
 887 more experienced in contracting than Chinese firms involved in  
 888 buyer-supplier relationships. Second, our sample is geographically  
 889 different from Luo's sample, which comes from Jiangsu, Shandong,  
 890 Shanghai, and Zhejiang. Firms in these four coastal provinces have  
 891 a relatively longer history of market liberalization, and are likely to  
 892 have more international experience than firms in our sample,  
 893 which include several inland provinces with limited experience in  
 894 dealing with foreign firms. Overall, our findings extend the work of  
 895 Poppo and Zenger (2002) and Luo (2002) by providing a more  
 896 nuanced and in-depth understanding of the relationship between  
 897 the two types of control mechanisms.  
 898

899 *5.3. Limitations and future research directions*

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

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

926 Geographically, limiting our study to China, while removing  
 927 cross-country differences, leaves open the question how general-

izable our findings are (Jiang et al., 2007; Meyer et al., 2009; Zhao  
 928 et al., 2007). While the substitution between formal and social  
 929 control in domestic buyer-supplier relationships may be found in  
 930 other more collectivist countries such as Japan (Dyer and Chu,  
 931 2003; McGuire and Dow, 2009), it may not be the case in other  
 932 Asian countries. Moreover, given that China itself is undergoing  
 933 rapid transitions (Keister, in press; Peng, 2003) and its legal  
 934 framework, although still primitive by Western standards, is  
 935 improving significantly (especially in the sector dealing with  
 936 foreign firms), contractual clauses may change, representing  
 937 another fruitful area for future research. It remains to be seen in  
 938 future research whether our China-based findings can be found in  
 939 other emerging Asian economies such as India or Vietnam (Li and  
 940 Peng, 2008; Zhan et al., 2009).  
 941

942 **6. Conclusion**

943 This article has examined the antecedents and nature of formal  
 944 and social control mechanisms in both domestic and international  
 945 buyer-supplier relationships in China. With reliable and robust  
 946 survey evidence collected nationwide with executives involved in  
 947 580 buyer-supplier relationships, we find that the length of  
 948 cooperation and institutionalization are important determinants  
 949 of the use of control mechanisms in both domestic and  
 950 international buyer-supplier cooperation. However, the length  
 951 of cooperation exerts different influences on the use of control  
 952 mechanisms in domestic and international buyer-supplier rela-  
 953 tionships. In contrast, institutionalization facilitates both the use of  
 954 social and formal control in domestic and international buyer-  
 955 supplier relationships in China. In addition, while formal control  
 956 and social control substitute each other in domestic relationships,  
 957 formal and social control mechanisms function neither as pure  
 958 complements nor as substitutes in buyer-supplier relationships  
 959 involving Chinese and foreign firms. In conclusion, not only the  
 960 antecedents such as the length of cooperation and institutiona-  
 961 lization have differentiated impacts on the choice of control  
 962 mechanisms in domestic and international buyer-supplier rela-  
 963 tionships, but the nature of the relationship between formal and  
 964 social control also differ significantly.  
 965

966 **Uncited references**

967 *Armstrong and Overton (1977) and Lambert and Harrington*  
 968 *(1990).*

**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 had been well developed in the cooperation	Boddy et al. (2000), Ingram and Inman (1996)
2. Whether a binding set of rules for both firms had been created	
3. Whether both firms in the cooperation had 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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