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The Many Futures of Contracts: Moving Beyond Structure and Safeguarding to Coordination and Adaptation

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In this article, we review the literature on interfirm contracting in an effort to synthesize existing research and direct future scholarship. While transaction cost economics (TCE) is the most prominent perspective informing the "optimal governance" and "safeguarding" function of contracts, our review indicates other perspectives are necessary to understand how

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contracts are structured: relational capabilities (i.e., building cooperation, creating trust), firm capabilities, relational contracts, and the real option value of a contract. Our review also indicates that contract research is moving away from a narrow focus on contract structure and its safeguarding function toward a broader focus that also highlights adaptation and coordination. We end by noting the following research gaps: consequences of contracting, specifically outcome assessment; strategic options, decision rights, and the evolution of dynamic capabilities; contextual constraints of relational capabilities; contextual constraints of contracting capabilities; complements, substitutes, and bundles; and contract structure and social process.

Keywords: *contracting; transaction cost economics; strategic alliances/JVs; cooperative strategy*

Contracts specify the terms of an agreement between two parties and represent the transaction or work to be done in a variety of forms—from informal promises to formalized agreements; from standard, boilerplate to highly customized terms; from explicit and complete to incomplete phrasing of task execution and output; from discrete, in which each party's identity is irrelevant (e.g., spot market), to complex, in which identity matters as both parties adapt to disturbances. The dominant perspective informing the use of contracts is transaction cost economics (TCE; Williamson, 1996), which is recognized theoretically and verified empirically (David & Han, 2004; Macher & Richman, 2008; Shelanski & Klein, 1995), and has shed light on numerous phenomena, including the optimal level of firm scope, foreign entry mode choices (Buckley & Casson, 1998; Hennart, 1988), and economic development (Li, Park, & Li, 2003; Peng, 2003; Williamson, 1996).

Early theorizing on contracting posited that organizational form did not matter—contracts function similarly in markets and firms as the firm is a nexus of contracts (Alchian & Demsetz, 1972; Jensen & Meckling, 1976). Since then, institutional and resource-based views have recognized that markets and firms possess different capabilities to exploit and to create value; in essence, institutions bound the examination of contracting (e.g., Williamson, 1991). Thus, in this review, we restrict our focus to the use of contracts in interfirm exchanges.

Our review highlights several theoretical lenses on contracting that go beyond transaction cost's concerns of optimal governance and safeguarding. In the first section, we review TCE, as well as four additional perspectives: relational capabilities, firm capabilities, relational contracts, and real options. While these paradigms are established theoretically and empirically, we note their remaining research gaps. Next, our review indicates that contracting research is beginning to focus less on contract structure only as a safeguard to economic risk and more on how contract structure affects coordination and adaptation. We review this literature in the second section by developing a functional classification of contracts that captures subtle trade-offs in the purpose of contracts: safeguarding, coordination, and adaptation. Based on the content found in these prior two sections, we outline future areas for research in the third section.

Perspectives Informing Contract Structure: TCE, Relational and Firm Capabilities, and Real Options

While some may argue that the transaction cost logic "may not matter to actual decision makers" (Barringer & Harrison, 2000: 372), this criticism is not substantiated: Ample empirical work supports this framework, and TCE dominates the empirical study of contracts (Macher & Richman, 2008; Shelanski & Klein, 1995). Nonetheless, contract structure cannot be explained only by considering efficiency through the lens of transaction costs (David & Han, 2004; Lajili, Madunic, & Mahoney, 2007). Our review indicates additional perspectives are necessary to understand contract structure: relational capabilities (i.e., building cooperation, creating trust), firm capabilities, relational contracts, and the real option value of a contract. In this section, we review TCE and these alternative perspectives.

Transaction Cost Economics

Main theoretical arguments. Williamson (1991: 279) argues that "the main hypothesis of TCE" is to "align transactions, which differ in their attributes, with governance structures, which differ in their costs and competencies, in a discriminating (mainly TCE) way." Contracts are governance mechanisms designed to minimize transaction costs: the costs of crafting a contract and managing a relationship and losses that accrue from opportunistic behavior or lack of adaptation. TCE argues that organizations exist due to market failures; that is, transactions can be carried out more efficiently and effectively by internal production than they can through contracting (Williamson, 1996). When market failures exist, managers cannot easily craft a contract to safeguard the transaction from risk. Thus, as transactions become harder to manage through formal contracts, transaction costs increase and exchange performance decreases relative to hierarchical alternatives (Nickerson & Silverman, 2003; Poppo & Zenger, 1998).

Assumptions about human nature and decision making (i.e., bounded rationality, opportunism, and bounded reliability) are related to why transactional characteristics (i.e., asset specificity, uncertainty, dependence, complexity) affect the effectiveness of contracts. Table 1 presents a summary of each of these key concepts, their definitions, and relevant literature.

As illustrated in Figure 1, contract design and its structure vary on different dimensions, starting with transactional attributes (e.g., Lusch & Brown, 1996; Oxley, 1997). At one end of the continuum are transactions characterized by a low level of risk and complexity, such as spot market transactions, which are fully contractible *ex ante* because their outcome is predetermined. Here, contracts serve mainly as a legal reminder of the transaction's terms, as the transaction is not complicated by asset specificity and uncertainty. As transactions become more complex and uncertain, and involve asset specificity and interdependency, the exchange requires more sophisticated contractual governance (Segal, 1999; Stinchcombe, 1965). Contracts with "a large number of clauses that are specified in detail" (Ariño & Reuer, 2005: 149) function as guidelines and safeguarding devices. Allocation of ownership becomes a way to assign key decision rights (Grossman & Hart, 1986; Hart & Moore, 1990)

Table 1
Key Concepts in the Contracting Literature

Concepts	Definitions	Relevant Work
Behavioral assumptions		
Bounded rationality	• Human behavior is intendedly rational, but only limitedly so due to cognitive limitations and information overload	Simon (1957) Cyert & March (1963)
Opportunism	• Contractual parties are guided by consideration of self-interest maximization	Jap & Anderson (2003) Wathne & Heide (2000)
Bounded reliability	• Ex post preferences and priorities can change due to uncertainty	Verbeke & Greidanus (2009) Zhou and Poppo (2010)
Transactional attributes		
Asset specificity	• Durable investments that are undertaken in support of particular transactions, which have a lower value in an alternative use or user (e.g., site, physical, human asset specificity, dedicated assets, brand name capital, and temporal)	Williamson (1985, 1996)
Uncertainty	• The unanticipated, unpredictable changes in circumstances surrounding an exchange; either environmental or behavioral	Ciccotello, Hornyak, & Piwowar (2004) Zhou, Poppo, & Yang (2008)
Complexity	• As the environment becomes more complex, potential outcomes fall under problems relating to "incompleteness of contract"	Segal (1999) Reuer & Ariño (2007)
Bilateral interdependence	• Partner firms are reliant on each other for performance of the relationship or of their individual organizations or for access to scarce resources	Lusch & Brown (1996)
Relational characteristics		
Prior experience	• The length of prior experience or number of prior alliances between two parties	Gulati (1995) Poppo & Zenger (2002)
Relational perceptions or behavior	• The strength of a relationship between two parties, measured through trusting beliefs or relational norms	Li, Poppo, & Zhou (2010) Reuer & Ariño (2007)
Examples of exchange hazards		
Adverse selection (hidden information)	• Selecting an inappropriate contracting partner due to the difficulty that organizations face in assessing the contract partner's capability and intentions (i.e., market for lemons)	Akerlof (1970) Arrow (1985)
Moral hazard (hidden action)	• Imperfect monitoring and/or enforcement in contracting leads to moral hazards, such as shirking and cheating	Chi (1994) Telser (1980)
Holdup	• Under the condition of interdependence, one party may penalize the other by withholding its cooperation	Klein, Crawford, & Alchian (1978)

and align incentives (Hennart, 1988, 1991; Oxley, 1997; Parkhe, 1993). If both parties make sunk investments (e.g., bilateral credible commitments), each has an incentive to cooperate and maximize joint payoffs; joint ownership thus mitigates hazards that arise when the trade is less contractible ex ante (e.g., Helm & Kloyer, 2004). Such formal contract structure and joint ownership induce tightly coupled forms of contracting where contractual parties

Figure 1
The Optimal Design of Contracts in Interfirm Exchanges

Theoretical Perspectives						Outcome and Examples	
Transaction Cost Economics			Capabilities and Relational Contracts		Real Options		
Transactional Attributes	**Level of Contractual Specification**	**Ownership involvement**		**Other Enforcement Mechanisms**	**Uncertainty and irreversibility**	**Performance Implications[a]**	**Contract Examples**
- Low complexity - Low asset specificity - Low interdependency	- The trade/output is fully contractible - Explicit -Low complexity	- Less Likely	- Less need for relational contracts and capabilities	- Market Competition -Reputation	- Low uncertainty - Low irreversibility	- High perfunctory performance - Low consummate performance	- Spot Market Transaction - Long-term transaction (e.g. buyer-supplier relationship) - License
↕	↕	↕	↕	↕	↕	↕	
- High complexity or ambiguity - High asset specificity -High interdependency	- The trade/output is only partially contractible (i.e. incomplete contract). - Process controls -Greater number of contingencies	- More Likely	- Greater need for relational contracts and capabilities	- Contractual Safeguards -Courts -Credible Commitments	- High uncertainty - High irreversibility	- Low perfunctory performance - High consummate performance	- Alliance - Joint R&D

[a]The terms *perfunctory* (outcomes *within* the contract: enforceable by a court of law) and *consummate* (outcomes *outside* the contract: beyond what the minimum of the contract require) are taken from Williamson (1975: 69).

depend on each other. Yet, as indicated in Figure 1, a variety of mechanisms enforce contracts, and more broadly incentivize both parties to cooperate: from formal contracts and courts to preserving one's reputation and earning repeat business.

Empirical support. As illustrated in Figure 1 and detailed in Table 2, the empirical literature strongly supports TCE. As transactional attributes increase, so too does the risk that exchange hazards will undermine exchange performance. To avert or minimize such transaction costs, managers (a) add contractual provisions that explicate rules and processes for resolving disagreements and addressing unexpected events (Hagedoorn & Hesen, 2007; Poppo & Zenger, 2002; Reuer & Ariño, 2007; Zhou, Poppo, & Yang, 2008); (b) increase the duration of the contract to recover, for example, asset-specific investments (Ciccotello, Hornyak, & Piwowar, 2004; Joskow, 1988); (c) create economic bonds or hostages, which tie parties to each other (Anderson & Weitz, 1992; Srinivasan & Brush, 2006); and (d) undertake equity investments (e.g., Helm & Kloyer, 2004). More thorough reviews of this literature are available (see David & Han, 2004; Furlotti, 2007; Lajili et al., 2007; Macher & Richman, 2008; Masten & Saussier, 2000).

Few scholars, however, examine the performance implications of contract structure, and even fewer examine the comparative performance of alternative governance choices, a fundamental proposition underlying the TCE framework (see Macher & Richman, 2008). This

Table 2
Empirical Studies on Interfirm Contracts Utilizing Different Theoretical Perspectives

Theory	Authors	Sample	Key Findings
Transaction cost economics	Lusch & Brown (1996)	454 U.S. wholesaler distributors	• Greater dependency between wholesaler–distributors and their suppliers is associated with a greater level of explicit contracting.
	Oxley (1997)	165 alliances of U.S. manufacturing firms	• Equity joint ventures are more likely when technological characteristics (e.g., exchange's scope is wider making monitoring more difficult) exist.
	Poppo & Zenger (2002)	285 information service exchanges	• Managers craft more customized, well-specified contracts as asset specificity increases.
	Helm & Kloyer (2004)	94 questionnaires from high-tech firms	• More detailed contract clauses exist to manage contractual hazards in complicated R&D alliances where cooperation is integral to alliance success.
	Oxley & Sampson (2004)	208 international R&D alliances	• The specification of alliance scope by contract is effective to control unintended knowledge leakage in an R&D alliance.
	Susarla, Subramanyam, & Karhade (2010)	103 IT service contracts	• Contracts are more extensive when the task is broad in scope and programmable and when the transaction size is substantial.
Relational capabilities, firm capabilities, and relational contracts			
Relational capabilities substitute for contracts	Gulati (1995)	2,417 alliances in 1970-1989	• R&D alliances and international alliances are more likely to be equity based. Repeated ties between the same partners are associated with lower probability of equity involvement.
Relational capabilities substitute for contracts	Uzzi (1997)	Ethnographic research at 23 entrepreneurial firms	• Embedded ties are a substitute for an efficient market: Firms form embedded ties when prices cannot convey important information. • Overembeddedness may lead to decreased performance and even threaten the survival of the firm if the environment changes.
Relational capabilities substitute for contracts	Dyer & Chu (2003)	344 supplier–automaker exchange relationships	• Trust reduces ex post transaction costs and has a positive effect on information sharing.
Relational capabilities complement contracts	Gulati & Sytch (2007)	Automaker–supplier relationships (64 suppliers for Ford and 67 suppliers for Chrysler)	• Joint dependence improves the performance of procurement relationships for auto manufacturers; this effect is partially mediated by joint action and the quality of information exchange.
Relational capabilities complement contracts	Poppo & Zenger (2002)	285 information service exchanges	• Increases in the level of relational governance are associated with greater levels of contractual complexity (and vice versa). Relational governance and customized contracts function as complements in enhancing exchange performance.

(continued)

Table 2 (continued)

Theory	Authors	Sample	Key Findings
Relational capabilities substitute for coordination function but not safeguarding function of contracts	Reuer & Ariño (2007)	88 strategic alliances	• Prior ties of alliance partners lead to fewer coordination provisions, but have no significant effect on enforcement (e.g., safeguarding provisions).
Relational capabilities complement contracts	Mayer & Argyres (2004)	11 high-tech supplier-buyer contracts over a 9-year period	• Prior ties enable learning as contracts become more complex though detailed task descriptions and contingency planning.
Relational capabilities complement contracts	Luo (2002)	293 JVs between Chinese and foreign partners	• Contracts and cooperation contribute to the performance of international JVs, both independently and interactively. Cooperation is more likely to enhance performance when contracts are more complete.
Relational capabilities complement contracts	Brown, Dev, & Lee (2000)	395 questionnaires from hotel general managers	• Relational attributes both alone and in combination with specific asset investments (e.g., synergistic effects) limit opportunism.
Relational capabilities complement contracts	Li, Poppo, & Zhou (2010)	168 Chinese dyadic contracts between a foreign subsidiary and its major suppliers	• Formal contracts play a complementary role in knowledge acquisition of foreign subsidiaries from local suppliers, such that contracts strengthen the effects of relational mechanisms on knowledge acquisition.
Relational capabilities complement contracts	Carson, Madhok, & Wu (2006)	125 R&D contracts for new product development	• Formal and relational contracts each have advantages in specific situations and are not simply substitutes such that relational contracts are robust to volatility and formal contracts are robust to ambiguity.
Contingencies affect optimal use of contracts and relational capabilities	Hoetker & Mellewigt (2009)	71 alliances in German telecommunication industry	• Optimal configuration of formal and relational governance mechanisms is contingent on the type of assets involved in an alliance, such that formal contracting is better for property-based assets while relational governance is better for knowledge-based assets.
Firm capabilities	Delios & Henisz (2000)	2,827 manufacturing subsidiaries of 660 Japanese public firms	• Firms' capabilities, in terms of industry and country, as well as overall international experience, influence the level of ownership in foreign subsidiaries: In countries with high public (private) expropriation hazards, firms increase (decrease) equity ownership levels.
Firm capabilities	Kale, Dyer, & Singh (2002)	78 U.S.-based firm with 1,572 alliances	• Firms with greater alliance experience and capability (i.e., dedicated alliance function which manages and coordinates all alliance-related activity) achieve greater success in alliances.
Firm capabilities	Schilling & Steensma (2002)	127 questionnaires regarding technology-sourcing decisions	• Uniqueness and imitability are related to the perceived potential for sustainable advantage as well as the threat of opportunism, which in turn affect the choice of governance mode.

(continued)

Table 2 (continued)

Theory	Authors	Sample	Key Findings
Firm capabilities	Mayer & Salomon (2006)	405 IT contracts	• With transaction attributes held constant, weak technological capabilities lead to the outsourcing of transactions, whereas strong technological capabilities had no independent effect.
Relational contracts	Parkhe (1993)	111 interfirm strategic alliances	• Alliance performance is positively associated with the length of the "shadow of the future" and is negatively associated with the extent of the perception of opportunistic behavior.
Relational contracts	Poppo, Zhou, & Ryu (2008)	137 purchasing relationships between manufacturers and suppliers	• For industries that use standard, boilerplate short-term contracts, the expectation of continuity (i.e., shadow of future) accounts for the relationships between prior ties on interfirm trust, which in turn positively affects exchange performance. • Asset specificity increases the expectations of continuity whereas uncertainty reduces the expectation of continuity.
Relational contracts	Lumineau & Oxley (2012)	102 vertical exchange contracts	• Firm's willingness to use private dispute resolution is positively affected by the shadow of future. • Familiarity with exchange partners does not increase the likelihood of private dispute resolution.
Real options theory	Kogut (1991)	92 manufacturing joint ventures	• Joint ventures function as options to expand: unexpected growth in the product market increases the likelihood of further acquisition.
	Folta (1998)	402 transactions in biotechnology industry	• The likelihood of choosing equity collaboration to acquisition is greater under the conditions of dissimilar partners, higher growth opportunities, technological uncertainty, and greater number of rivals.
	Folta & Miller (2002)	557 contractual events in biotechnology industry	• Resolution of uncertainty for high-value technologies motivates further commitment decisions such as buyout of research partners.
	Reuer & Tong (2005)	2,594 international joint venture (IJV) transactions	• Firms are more likely to use explicit call options when IJVs are related to core businesses, the protection of intellectual property is weak, and political risks in host countries are lower.
	Tong, Reuer, & Peng (2008)	2,698 firm-year observations from 293 U.S. manufacturing firms	• IJVs with minority ownership, noncore product-market focus, and location in developed countries are positively associated with the value of growth options.

lack of empirical work is driven by several factors. First, measuring performance is difficult because it usually requires hand-collected survey data. Second, governance forms for exchanges with "high" levels of transactional attributes are more complex and idiosyncratic, thus leading to empirical work that is "highly eclectic . . . with less emphasis on directly testing the predictions of Williamson's TCE framework" (Carter & Hodgson, 2006: 468; see, e.g., Newbert, 2007; Poppo, 1995, 2010; Walker & Poppo, 1991). Third, few empirical designs correct for the endogeneity of managerial decisions and the expected performance of governance choices (Hamilton & Nickerson, 2003: 55). Nonetheless, consistent with transaction cost logic, some studies show that the correct matching of contract design to transactional attributes is positively related to higher performance (Gong, Shenkar, Luo, & Nyaw, 2007; Poppo & Zenger, 2002) and higher ex post transaction costs, such as bargaining over ex post adjustments to the contract (Poppo & Zenger, 2002; Walker & Poppo, 1991).

Relational and Firm Capabilities

Main theoretical arguments. Relational characteristics, like trust and relational norms, significantly influence interfirm contracts (Bradach & Eccles, 1989; Granovetter, 1985). Yet empirical work fails to confirm a selection logic for the development of relational characteristics (see Poppo, 2013): According to the selection logic, managers should invest in the development of trust or relational norms only when transactional attributes, such as asset specificity and uncertainty, pose a risk of exchange hazards. Instead, the development of relational characteristics appears unrelated to transactional attributes. This process may be relatively idiosyncratic, and perhaps implies a capability that is a source of advantage (Dyer & Singh, 1998; Madhok & Tallman, 1998).

Research on the effects of relational characteristics views these characteristics as either substitutes or complements to contracts. The substitution perspective argues that relative to formal contracts, relational attributes minimize transaction costs (Dyer, 1996; Dyer & Singh, 1998). It suggests, for instance, that managers can effectively substitute trust for some elements of formal contracts, such as negotiated changes that could require the contract to be rewritten.

In contrast, the complements perspective proposes that the combined use of contracts and relational governance promotes cooperation (Poppo & Zenger, 2002). By specifying contractual safeguards, parties signal their intent to behave cooperatively, thus facilitating the development of relational norms. Likewise, because contracts are necessarily incomplete, relational norms and trust foster "continuance and bilateralism when change and conflict arise" (Poppo & Zenger, 2002: 713). Macneil's conceptualization of relational governance (Macneil, 1978, 1980) greatly influences this approach. It specifies norms that help overcome the limits of contracts: Partners are flexible with respect to change; treat problems that arise in a collaborative fashion, rather than in a self-maximizing way; and solicit and exchange private information often (Bercovitz, Jap, & Nickerson, 2006; Carson, Madhok, Varman, & John, 2003; Carson, Madhok, & Wu, 2006; Heide & John, 1992; Jap & Ganesan, 2000; Poppo & Zenger, 2002). Because these norms govern and guide exchange partners to

behave in a mutually beneficial and supportive fashion, they complement the use of formal contracts in safeguarding the exchange relationship.

Firm capabilities also affect contracts. This literature is more fragmented; it recognizes that different capabilities, including specific experience, learning, technological competences, and formalized structures, such as alliance functions, may affect contract structures in distinct ways. For example, firms with greater international experience as well as industry- and country-specific knowledge are more likely to have greater equity involvement in countries with high expropriation hazards (Delios & Henisz, 2000).

Relational contracts represent another form of organizational capability and are based on the game-theoretic logic for how cooperation can be sustained without enforceable contracts (Baker, Gibbons, & Murphy, 2002). When there is a sufficiently long window of future exchange such that the gains from repeat business outweigh gains from self-interested behavior, the interfirm exchange may be more cooperative (Axelrod, 1984). Expectations for future business need not be contractually specified for cooperation to occur; rather informal (joint) expectations of continuance and/or commitments to future interaction are sufficient (Ring & Van de Ven, 1994; Telser, 1980; Poppo, Zhou, & Ryu, 2008). This implicit expectation highlights the inherently incomplete nature of contracts and may be very difficult to build (see, e.g., Gibbons & Henderson, 2012).

Empirical support. Despite early support for the substitution logic (e.g., Macaulay, 1963), more recent studies have indicated that contract structure and relational characteristics are complements (Brown, Dev, & Lee, 2000; Dyer & Chu, 2003; Hoetker & Mellewigt, 2009; Li, Poppo, & Zhou, 2010; Luo, 2002; Mellewigt, Madhok, & Weibel, 2007). This work has focused increasingly on examining the interaction between structural and relational aspects of contracting, such as how different levels of formalization influence trust dynamics or how relational dynamics affect the formal design and application of contracts (e.g., Faems, Janssens, Madhok, & Van Looy, 2008; Reuer & Ariño, 2007; Zaheer, McEvily, & Perrone, 1998). For example, given prior contracting experience with a partner, managers tend to reduce coordination clauses, while maintaining safeguarding clauses (Reuer & Ariño, 2007). Thus, as we discuss in the third section, future research should focus on boundary constraints or contingencies that affect the relationship between relational capabilities and contracts.

Surprisingly little empirical work has examined relational contracts among firms. Parkhe's (1993) seminal article shows that for strategic alliances, the expected durability of the relationship is associated with greater spillovers, greater relative profitability, and higher overall alliance performance. Poppo, Zhou, and Ryu (2008) find that for buyer–supplier exchanges in an industry with boilerplate contracts, prior history does not directly affect trust; instead, relational contracts account for the positive impact of prior experience on trust. Furthermore, Lumineau and Oxley (2012) show that when the shadow of the future is longer, litigation is less likely among partners when disputes arise. In sum, these studies affirm the importance of time horizon and exchange performance, and they examine features that enhance continuance, such as frequency of interaction, cospecialized assets, and behavioral transparency.

Capabilities also affect contract structure. For example, "contract design capabilities can become a key source of competitive advantage" (Argyres & Mayer, 2007: 1072) as managers learn to write better contracts (Mayer & Argyres, 2004). Delios and Henisz (2000) find that capabilities developed via industry and country-specific experience, as well as international experience, can reduce sensitivity to expropriation hazards. In a related vein, Kale, Dyer, and Singh (2002) find that firms with alliance experience and resources dedicated to coordinate alliance-related activities are more likely to realize greater success when entering alliances. Furthermore, Schilling and Steensma (2002) find that when managers source technology, their perceptions of how difficult a technology is to imitate are related to both value creation and the threat of opportunism. High perceptions of opportunism make it more likely that a technology will be acquired rather than licensed. Recently, Mayer and Salomon (2006) illustrate that with the level of contracting hazards held constant, firms are more likely to outsource the transaction when their technological capabilities are weak.

Real Options Theory and Interfirm Contracting

Main theoretical arguments. Real options theory offers an alternative theoretical approach to contract structure. It examines the trade-offs of committed and flexible ownership strategies; whereas a significant equity investment imposes substantial risk, deferring an irreversible investment (e.g., option to acquire or divest) provides flexibility (see Li, James, Madhavan, & Mahoney, 2007 for a review). Theory highlights two underlying conditions that affect the use and value of real options: (a) endogenous and exogenous uncertainty and (b) the potential for partners' valuations of the venture to diverge (Chi, 2000; Chi & McGuire, 1996). More recent theoretical work has demonstrated additional factors that affect the value of a growth option: partner asymmetries in absorptive capacity, frictions in knowledge and asset markets, misaligned incentives for knowledge sharing, ex post bargaining costs, and switching costs (Chi & Seth, 2008).

Real options theory makes three contributions to contracting theory. First, when uncertainty exists, it generates contractual governance predictions that run counter to those of TCE. TCE suggests that uncertainty leads to tightly coupled contracts or wholly owned subsidiaries to deal with opportunism (Williamson, 1975, 1985), while real options theory suggests that firms benefit from flexibility. Thus, options reduce the need for immediate action when uncertainty surrounds demand projections or the final form, and thus value, of the venture (Chi, 2000).

Second, while TCE assumes that contractual governance for interfirm relationships is static, real options theory suggests that contractual governance may be modified in response to changes in the transaction environment. Third, real options can be viewed as complementary to TCE: The inclusion of option rights and termination conditions reduces ex post negotiation costs and ex post opportunistic bargaining when asymmetric power exists (Chi, 2000). For example, clauses that serve as call options (e.g., the option to acquire in a joint venture) are contingency claims that safeguard for exchange hazards. Moreover, factors that increase ex post transaction costs will affect the use and value of real options (Chi & Seth, 2008).

Empirical support. Most empirical studies based on real options theory have limitations because they do not examine the outcomes of investments in real options (Trigeorgis, 1996) and do not consider factors that research in dynamic capabilities and organizational economics posits as relevant (Chi & Seth, 2008). Instead, they show how external uncertainty leads to different contractual governance forms (Chi & McGuire, 1996; Kogut, 1991). For example, this work finds that when there is unexpected growth in a market and resolution of external uncertainty, firms are more likely to terminate alliances and joint ventures (JVs) and increase their acquisitions (Folta & Miller, 2002; Kogut, 1991). It also finds that firms are more likely to enter into JVs than they are to acquire when greater exchange hazards are present (Folta, 1998) and are more likely to license, rather than acquire, when commercial uncertainty is high (Schilling & Steensma, 2002).

More recent options research focuses on contingencies that affect the level of ownership commitment (e.g., wholly owned subsidiary vs. minority JV), as well as option valuation. For instance, it finds that explicit call option clauses are prevalent when ventures are related to core businesses, protection of intellectual property is weak, and political risks are lower (Reuer & Tong, 2005); minority ownership, noncore product-market focus, and location in developed countries are positively associated with the value of growth options in international JVs (Tong, Reuer, & Peng, 2008); and competition makes a more committed ownership strategy relatively more valuable (Li & Li, 2010).

*Overall conclusions.*TCE is well verified, but it does not fully explain contract structure. A firm's capabilities influence the contracting structure it uses and the performance it realizes. More pointedly, technological capabilities and foreign experience increase firm ownership or equity in the venture, while a formal function dedicated to managing and monitoring alliances and relational capabilities augment exchange performance. Second, empirical research suggests that for complex contracts, relational capabilities complement (rather than substitute for) TCE considerations. Third, relational contracts—formal or informal promises of repeat business—are a powerful safeguard and clearly alter interests to favor cooperation over self-interest. Finally, real options both contrast with and complement TCE logic: Early research suggested that firms favor lower levels of equity investments when there is uncertainty, but later research suggests that TCE logic may hold because ex post bargaining costs can dissipate value capture.

Toward a Functional Focus on Contracting

Contract research has begun to focus less narrowly on the structure of contracts per se. The structural approach highlights how optimal governance choices—those that best safeguard investments and minimize transaction costs—depend on transactional attributes. In contrast, the functional approach proposes that safeguarding parties' interests might not be the sole function and purpose of the contract (Barringer & Harrison, 2000). Parties to the relationship might structure contracts to facilitate adaptation and/or coordination of their actions (Parmigiani & Rivera-Santos, 2011). The functional approach thus implies that scholars must focus on the specific functionality of contracts to understand how firms should

contract for venture success. Below, we discuss the TCE and strategic alliance perspectives on coordination and adaptation to highlight the contrast between the structural and functional approaches.

TCE views exogenous adaptation and coordination as contributing to transaction costs and informing the selection of optimal governance (e.g., safeguarding) choices. Adaptation is "the central problem of economic exchange" for TCE because contracting parties must adapt to exogenous disturbances that vary in frequency and consequences (Williamson, 1996: 229). For exchanges that can be readily coordinated through the price system, markets can accommodate adaptation. When adaptation requires consent, however, delays in reaching consensus and the potential strategic bargaining opportunities can create sizable costs that make market exchanges difficult (Williamson, 1996). Coordination is also logical for discriminating between the efficiency of markets and firms; as a by-product of interdependence and adaptation, managers seek to minimize agency costs through structural safeguards (e.g., equity investments; bilateral credible commitments; vertical integration). Thus, adaptation and coordination matter to the extent they affect the comparative governance choice.

The strategic alliance literature has a broader view of contracting. It suggests that because managers are tasked with growing and expanding their businesses, they use alliances to access technologies and capabilities, as well as facilitate joint learning or development (e.g., Inkpen & Tsang, 2007; Mowery, Oxley, & Silverman, 1996). Accordingly, firms in alliances attempt to devise contracts that not only safeguard investments but also foster learning and coordination. The strategic alliance literature hence views endogenous coordination and adaptation as arising from ongoing interdependent tasks, such as those that give rise to dynamic capabilities (Chi & Seth, 2008; Gulati & Singh, 1998). For example, Parmigiani and Rivera-Santos (2011) note that alliances are suited for sharing knowledge that is more complex and less codified, suggesting that when learning is needed, coordination among the parties to share such tacit knowledge is important. Coordination is most important when the relationship is complex and interdependencies among the firms in the relationship are greatest (Ren, Gray, & Kim, 2009). When coordination is endogenous to the task, its costs increase as a function of "the anticipated organizational complexity of decomposing tasks among partners along with ongoing coordination of activities to be completed jointly or individually across organizational boundaries and the related extent of communication and decisions that would be necessary" (Gulati & Singh, 1998: 782). Adaptation triggered by ongoing learning and external constraints, such as changes in demand projections, make task completion more difficult, as parties might not fully disclose private knowledge or reach consensus on how to adapt.

Accordingly, the functional approach implies that even when firms select similar governance alternatives (e.g., alliances), their motivations for doing so might be different. Below, we focus on the literature surrounding these contractual functions. The appendix describes the methods we use to systematically review this literature. Table 3 breaks out the studies we examined.

Contracts as a Safeguarding Mechanism

The TCE perspective on contracting identifies contract design as a way to mitigate ex ante and ex post risks of opportunism and thereby safeguard partner investments. Contracts

are likely to safeguard under several conditions. First, when knowledge that is complex, tacit, or less codified is transferred, parties to the contract are likely to define and enforce stronger mechanisms to safeguard their investments (Parmigiani & Rivera-Santos, 2011). In addition, when transactions are negotiated, contracts that involve specific assets are likely to specify ways to safeguard partner investments to minimize exchange hazards (Leiblein, 2003). Third, when organizations combine resources with equity ownership, such as in the tightly coupled relationships that Barringer and Harrison (2000) describe, contracts are likely to serve as a means of safeguarding equity investments.

Empirical work that uses the safeguarding approach examines determinants of contractual completeness and complexity (Barthelemy & Quélin, 2006), as well as safeguarding provisions, including assignment of property rights (Klein Woolthuis, Hillebrand, & Nooteboom, 2005; Lerner & Merges, 1998), unilateral early termination rights (Argyres & Mayer, 2007), and processes for dispute resolution (Argyres & Mayer, 2007). Until recently, less research has focused on specifically whether these provisions serve their intended purposes.

Contractual completeness. Research on contract completeness assumes that more detailed and complete contracts specify more alternatives, thus limiting the potential for opportunism (for reviews, see Macher & Richman, 2008; Shelanski & Klein, 1995). This work generally finds that more complete contracts appear to mitigate exchange hazards, thereby improving exchange performance; yet strategy researchers find that this relationship can be bolstered when additional factors are present. In particular, relational governance or cooperation strengthens the association of more complete contracts with performance (Gong et al., 2007; Poppo & Zenger, 2002; Ryall & Sampson, 2009). Yet Lusch and Brown (1996) find to the contrary that explicit contracts are not related to wholesaler performance; rather, normative contracts are associated with greater wholesaler performance as greater trust between firms improves relationship quality. In addition to relational factors, the effect of contracts on opportunistic behavior is enhanced through the supplier's network embeddedness and detailed mutual contacts between the buyer and supplier (Wuyts & Geyskens, 2005). Overall, this research suggests that contracts are but one of several factors that affect exchange performance by mitigating transaction costs; reputation, network structure, and relational capabilities are other important correlates.

Allocation of decision rights. Allocation of rights in the relationship is another means to safeguard assets. Such rights are allocated to one party when externalities arise that may lead to moral hazard (e.g., Arruñada, Garicano, & Vázquez, 2001) or when partner firms are in weak bargaining positions (e.g., Adegbesan & Higgins, 2011). In addition, when one firm finances another's activities, termination rights are often granted either unilaterally to the financing firm or are granted mutually (Robinson & Stuart, 2007). It is argued that the allocation of termination rights will reduce the threat of partner shirking by allowing a firm to end the relationship at will.

While the effects of termination rights are relatively unexplored, the allocation of control rights has received more attention. Control rights may include monitoring provisions meant to provide behavioral controls, as opposed to purely incentive-based controls. This

Table 3
Empirical Studies on the Function of Contracts in Interfirm Relationships

Authors	Contract Function	Theoretical Foundation	Contract Type	Equity Involved	Measures of Interest	Sample and Key Study Findings
Argyres, Bercovitz, & Mayer (2007)	Adaptation	Transaction cost economics, organizational learning	Buyer/supplier (service)	No	Contingency planning; task description; interdependence; relationship history	386 contracts between a supplier of IT services and its customers over a 13-year period. A more extensive relationship history leads to greater efforts at contingency planning during the contracting process; contracts with more contingency planning include a more detailed task description.
Faems et al. (2008)	Safeguarding, adaptation, coordination	Contract application	Joint R&D	No	Case-based study	Two R&D alliances between two firms. The first one was a failure, while the second one was a success. When alliance partners fear appropriation and avoid monitoring and information exchange, they have lower expectations of a new project's feasibility than do alliance partners that do not avoid these same activities. That is, monitoring and information exchange positively affect exchange performance when exchange risks exist.
Gong et al. (2007)	Coordination	Contract completeness	Manufacturing	Yes—joint venture	Contract completeness; partner cooperation; JV performance	224 Chinese IJVs. Number of parents is negatively related to contract completeness and partner cooperation and is negatively related to JV performance; contract completeness and partner cooperation are positively related to JV performance; contract completeness partially mediates the relationship between number of parents and JV performance.
Haeussler & Higgins (2009)	Safeguarding, coordination	Property rights	Joint R&D	No	Alliance success; control rights; prior relationships; trust; communication; technical difficulties	76 German biotech firms receiving funding from a German government-owned bank Positive, significant relationship between total control rights and critical control rights allocated to the biotech firm and alliance success; success is measured as the extent of perceived knowledge spillover obtained by the biotech firm; prior relationship reduces success, while trust increases likelihood of success; more meetings between partners and greater difficulties technically also reduce alliance success.
Klein Woolthuis, Hillebrand, & Nooteboom (2005)	Safeguarding, coordination	Transaction cost economics; relational governance; contract completeness	Joint R&D	No	Case-based study	Four case-based studies of joint development. Trust and contracts are found to be both complements and substitutes. The degree of trust is a better predictor of success than is contract completeness.

(continued)

Table 3 (continued)

Authors	Contract Function	Theoretical Foundation	Contract Type	Equity Involved	Measures of Interest	Sample and Key Study Findings
Lerner, Shane, & Tsai (2003)	Safeguarding	Property rights, agency theory	Joint R&D	Mixed sample	Alliance success; control rights; equity financing market; stage of the technology involved; partner bargaining power	Contracts for 200 alliances between biotech and pharmaceutical firms. R&D firms are more likely to get control rights when public equity financing is readily available and when in a stronger financial position; pharmaceutical firms get more control rights in early stage projects; alliances granting the bulk of control rights to R&D firms are more successful in reaching Phase III clinical trials; this effect is stronger in weak financing markets. When financing conditions improve, biotech firms are able to renegotiate control rights back from the pharmaceutical firm.
Lumineau & Malhotra (2011)	Safeguarding	Incomplete contracting; relational governance	Unknown	Mixed sample	Dispute resolution costs; interest-based vs. rights-based approach; contractual governance structure	102 contracts from European firms that resulted in legal disputes. Greater contractual detail increases likelihood that firms adopt a rights-based and an interest-based approach to dispute resolution; when coordination is emphasized, there is a greater probability that contractual detail leads to use of an interest-based approach; costs are greater with reliance on a rights-based approach and decreased significantly when relying on the interest-based approach.
Luo (2002)	Adaptation, coordination	Contract completeness	Manufacturing	Yes—joint venture	Contract term specificity; contingency adaptability; present cooperation; performance of the IJV	293 JVs between Chinese and foreign partners. Contingency adaptability is positively related to present cooperation; performance is positively affected by cooperation; effect of cooperation is positively moderated by contract term specificity and contingency adaptability; effects of term specificity and contingency adaptability on performance have inverse U shapes.
Luo (2005)	Adaptation	Transactional attributes; institutional environment	Joint R&D	Yes—joint venture	Term specificity; contingency adaptability; contract obligatoriness; knowledge proprietariness; economic exposure; interpartner dependency	110 JVs between Chinese and foreign partners. Term specificity is positively related to knowledge proprietariness and negatively related to governmental intervention, economic exposure, and industry asset intensity; contingency adaptability is positively related to governmental intervention, environmental volatility, knowledge proprietariness, economic exposure, and interpartner dependence; contract obligatoriness is positively related to legal system incompleteness, environmental volatility, economic exposure, and expected duration of the JV.

(continued)

Table 3 (continued)

Authors	Contract Function	Theoretical Foundation	Contract Type	Equity Involved	Measures of Interest	Sample and Key Study Findings
Lusch & Brown (1996)	Safeguarding, coordination	Transaction cost economics, relational contracting	Buyer/supplier (goods)	No	Explicit contracts; normative contracts; relational behavior; dependence; long-term orientation; wholesaler performance	Survey with respondents from 454 wholesale/distributor firms with fewer than 20 employees across 16 SIC codes. Explicit contracts are associated with both supplier dependence and either distributor dependence or bilateral dependence; as bilateral dependence increases, relational behavior between the supplier and wholesaler increases; long-term orientation of the wholesaler is linked to an explicit contract; explicit contracts are not significantly related to wholesaler performance; however, normative contracts are significantly related to performance.
Malhotra & Lumineau (2011)	Safeguarding, coordination	Incomplete contracting; relational governance	Unknown	Mixed sample	Control provisions; coordination provisions; goodwill trust; competence trust; intent to continue	102 disputes between European firms. More control provisions lead to a decrease in goodwill trust and increase in competence-based trust; coordination provisions lead to increase in competence-based trust; goodwill and competence trust increase the likelihood of intent to continue the relationship; more control provisions decrease the likelihood of relationship continuance, while coordination provisions increase likelihood of relationship continuance.
Mayer & Argyres (2004)	Adaptation, coordination	Transaction cost economics, organizational learning	Buyer/supplier (service)	No	Changes in contracts over time	11 contracts between a technology firm and its customer over a nine-year period. Contracts are continually modified to improve communication, clarify responsibilities and expectations, plan for contingencies, and modify the format of the relationship; firms add terms to contracts as unforeseen issues or contingencies arise; trust is easier to build with detailed contracts, as expectations, roles, and responsibilities are clear and misunderstandings are avoided.
Poppo & Zenger (2002)	Safeguarding	Transaction cost economics; relational governance	Buyer/supplier (service)	No	Performance; detailed contracting; relational norms	285 IT informants who are in charge of outsourcing business. IT informants report greater performance of the relationship when contractual complexity is higher; relational governance and contractual complexity act as complements, such that when both are high, performance is most satisfactory.

(continued)

Table 3 (continued)

Authors	Contract Function	Theoretical Foundation	Contract Type	Equity Involved	Measures of Interest	Sample and Key Study Findings
Robinson & Stuart (2007)	Safeguarding, coordination	Property rights, agency theory	Joint R&D	Mixed sample	Termination provisions; provisions for monitoring; equity amount; contract details; experience in alliances	125 alliance contracts relating to early stage genomics-related research between small biotech R&D companies and pharmaceutical firms. Many contracts contain unverifiable provisions, such as the biotech firm must put the same level of effort into the alliance activity as to other projects, requires numbers of employees devoted to the project or quality restrictions on individuals devoted; pharmaceutical firms are often allocated the right to terminate the agreement but the biotech firm rarely has the unilateral right; ownership of residual intellectual property reverts to the R&D partner (with the exception of breach, change in ownership, or bankruptcy in some cases), but is less likely when projects are longer term or involve older firms.
Ryall & Sampson (2009)	Safeguarding, adaptation	Transaction cost economics, relational contracting	Joint R&D	Mixed sample	Detailed contracts, contract provisions	52 joint technology agreements in telecommunications equipment and microelectronics. A more detailed contract for partners that work together leads to usefulness in maintaining a smoothly functioning contract; intellectual property is split between partners according to input contributions, each firm's area of expertise, and end-product market.
Wuyts & Geyskens (2005)	Safeguarding	Transaction cost economics, relational contracting	Buyer/supplier (goods)	No	Detailed contracts, close partner selection, partner opportunism	Survey of purchasing managers at 177 manufacturing firms in the Netherlands. Detailed contracts are not related to a reduction in partner opportunism; detailed contract drafting and close partner selection enhance perceptions of opportunism; network embeddedness of the firms enhances the effectiveness of detailed contract drafting in reducing opportunism.

research focuses on which partner firm receives most of the control rights as a function of bargaining power and risk associated with financing a project (e.g., Adegbesan & Higgins, 2011; Elfenbein & Lerner, 2003; Lerner & Merges, 1998). For instance, financing firms with greater leverage win higher shares of control rights (e.g., Adegbesan & Higgins, 2011).

Aghion and Tirole (1994) argue, however, that in situations where one firm finances a project by another more specialized firm, control rights should be assigned to the more specialized R&D firm to align incentives. Failing to apportion the benefits of the research to the firm responsible for the output creates a less powerful incentive and limits the effectiveness of research performed. Recent work supports this argument. In examining 200 relationships between pharmaceutical and biotech firms, for instance, Lerner, Shane, and Tsai (2003) find that alliances granting greater control rights to biotech (R&D) firms are more successful in reaching Phase III clinical trials; this effect is strongest when equity financing markets are weak. Similarly, Haeussler and Higgins (2009) find that when greater control rights and critical decision rights are allocated to biotech (R&D) firms, these firms perceive greater success from the relationship, where success is defined as perceived knowledge spillovers obtained. This result suggests that incentive alignment via allocation of control rights can significantly affect alliance success. Given the gap between the prediction of how control rights should be allocated for optimal success (e.g., Aghion & Tirole, 1994) and the actual allocation of these rights (e.g., Adegbesan & Higgins, 2011; Elfenbein & Lerner, 2003; Lerner & Merges, 1998), future research should consider further why firms choose suboptimal allocation of control rights.

Summary. Recent research supports the logic that contracts can guard against opportunism, finding that exchange performance is enhanced through additional control mechanisms (e.g., reputation effects; network position; relational capabilities). Second, financing firms are reluctant to relinquish control rights even though allocating rights to a partner firm better aligns incentives and improves performance. We suspect that suboptimal allocation of control rights undermines coordination arising from endogenous uncertainty; further work is needed to examine what mechanisms undermine governance choices.

Contracts as a Coordination Mechanism

Contracts also formally coordinate the contracting relationship (e.g., Mayer & Argyres, 2004). Firms in ongoing relationships are less likely to achieve their objectives when the contracted tasks are highly uncertain and complex (Eckhard & Mellewigt, 2005). When such tasks are completed across organizational boundaries, they require high levels of coordination due to the interface of activities and concerns relating to the division of labor (Dekker, 2004; Gulati & Singh, 1998). To enhance coordination, firms use contracts in several ways: to define roles and responsibilities (Klein Woolthuis et al., 2005; Mayer & Argyres, 2004), to define provisions for monitoring the process (Argyres & Mayer, 2007), and to designate who is the project manager (Klein Woolthuis et al., 2005; Ryall & Sampson, 2009). Mayer and Argyres (2004) note that over time, contracting parties may modify contracts to enhance

communication among personnel across firms and to clarify the expectations and responsibilities of both parties. In their study, the parties did not initially plan for all potential problems, but responded to problems identified and addressed these problems in future contractual statements of work; this finding indicates that the contract can enhance coordination (Mayer & Argyres, 2004).

Contracts may also coordinate relationships through provisions that monitor processes rather than outcomes. Many contracts contain unverifiable provisions, such as clauses requiring firms to exert the same effort into the alliance as they place into other projects, to have a certain number of full-time employees working on the project, or to assign employees of a certain quality level (Robinson & Stuart, 2007). In addition, provisions that mandate monitoring of processes employed in the venture appear to increase communication of task-specific activities, which can facilitate greater collaboration (e.g., effective coordination; Faems et al., 2008).

Not surprisingly, relational capabilities complement contracts' coordinating function in enhancing venture performance. Gong and colleagues (2007) find that contract completeness and partner cooperation are positively related to JV performance. In a study of 293 JVs between Chinese firms and foreign partners, Luo (2002) finds that cooperation among partners is significantly related to JV performance. This relationship is moderated by contract specificity and adaptability to contingencies, suggesting that contract design improved cooperation and thereby yielded better JV performance.

A third means by which contracts enhance coordination is through provision design and application. In their study of dispute resolutions, Lumineau and Malhotra (2011) find that when contracts emphasize coordination, parties are more likely to use an interests-based approach, which emphasizes collaboration and is less costly for resolving disputes. These findings indicate that contracts framed with coordination in mind affect how parties examine and resolve disputes. In addition, Weber, Mayer, and Macher (2011) examine contracts with provisions either to terminate the contract early or to extend the contract. Their interviews with managers involved in such contracts suggest that provisions to terminate contracts early inhibit flexibility and creativity, while contracts with provisions to extend the relationship promote creativity. Their results suggest that the framing of provisions may psychologically affect how parties behave in a relationship and coordinate their actions.

This initial work offers significant evidence that how a contract is written can affect the subsequent coordination of the parties in, and the outcomes of, the relationship. Besides preventing opportunism or misappropriation of assets, contracts can also promote coordination across firm boundaries.

Contracts as an Adaptation Mechanism

Contracts are likely to serve as adaptation mechanisms when there is uncertainty (Leiblein, 2003). Changes following contract agreements often force relationships between firms to adapt: Changes may be exogenous, due to changes or volatility in demand or supply, or endogenous, due to resolution of or learning from uncertain, complex projects. Provisions

for adaptation may define mutually agreed on tolerance zones for unexpected events or provide procedures to use when changes are identified. Research that examines how contracts can facilitate adaptation is sparse, but some provisions identified in our review include those related to change procedures among firms (Mayer & Argyres, 2004), force majeure (Klein Woolthuis et al., 2005), and price adjustments as prices fluctuate (e.g., Crocker & Reynolds, 1993).

There are two main ways that contracts can be used to adapt to uncertain environments. First, contracts may identify payoff schemes that depend on environmental circumstances, similar to provisions relating to alternative pricing arrangements as prices fluctuate (e.g., Crocker & Reynolds, 1993). We know of no research, however, that examines such contracts. Modified payoff schemes may alleviate the risks associated with environmental uncertainty by defining mutually agreed on allocation of alliance gains based on different tolerance levels, which may affect partner commitment to an interfirm relationship.

Second, contracts may include provisions for adapting to environmental contingencies. Argyres, Bercovitz, and Mayer (2007) note that as firms contract over time, they include more contingency planning. Mayer and Argyres (2004) find that contractual terms were added to future contracts as contingencies arose. These two studies support the notion that firms learn to add clauses relating to contingency planning over time.

In a related vein, Luo (2002) finds that contingency adaptability has an inverse U-shaped relationship with performance and moderates the relationship between cooperation among the partners and performance of the relationship. These findings indicate that too little or too much contingency planning results in significantly lower performance. They also suggest that contracts with moderate levels of contingency planning can significantly enhance performance.

Overall Summary

The most prominent contract function in the literature is that of safeguarding partner investments (Eckhard & Mellewigt, 2005). Contracts serve as safeguards in several ways, including the use of a detailed contract, assignment of control rights, and assignment of termination provisions to different parties. Contracts also coordinate relationships (e.g., Mayer & Argyres, 2004) by assigning roles and responsibilities, providing for monitoring of processes, project schedules, and milestones, and designating project managers. Finally, contracts aid adaptation by allowing the relationship to adapt if unforeseen circumstances arise (Luo, 2002). Contracts can specify contingency plans or alternative payoffs given different future states that may affect the relationship. Overall, contracts can enhance the performance of complex interfirm relationships in several different ways.

Future Research Opportunities

While numerous prior reviews strongly support TCE logic, our synthesis of the interfirm contracting literature shows plural theoretical perspectives on contracting. First,

alternative and at times complementary considerations influence contract structure and/or overall exchange performance: relational contracts, firm capabilities, relational capabilities, and strategic options. Second, these considerations extend contracts' function and purpose beyond the TCE focus on safeguarding to include coordination and adaptation. While TCE and safeguarding have received considerable empirical attention, few studies examine the multiplicity of theoretical perspectives and contract functions. Thus, we note in this section some of the many empirical gaps, summarize the primary conclusions and contributions of this article in Figure 2, and describe future research areas and important questions in Table 4.

Opportunity 1: Consequences of Contracting–Outcome Assessment

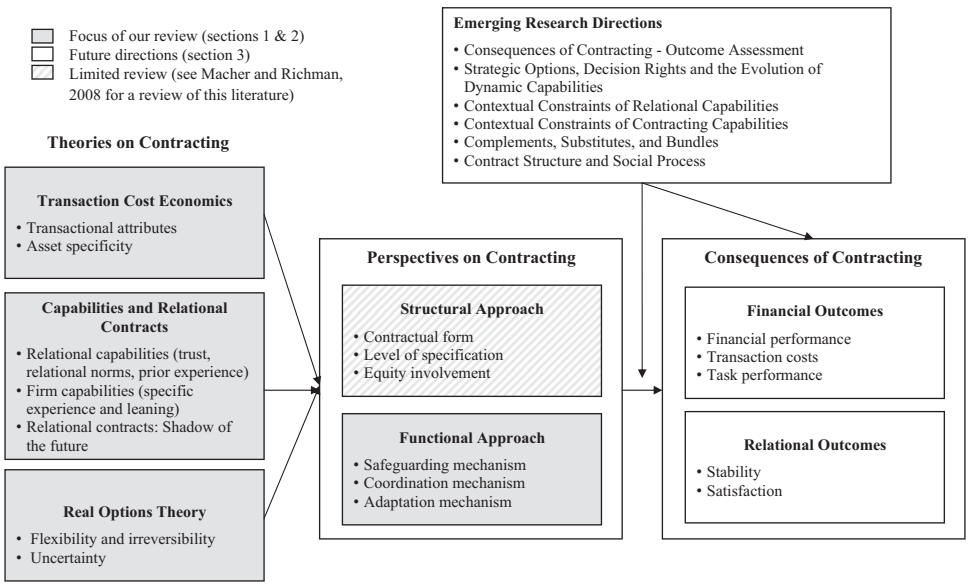
Despite the research reviewed in the prior two sections, there is a paucity of empirical work showing that optimal design and functioning of contracts results in better outcomes. For example, Reuer and Ariño (2007) find that coordination provisions were less prevalent in contracts between parties that have already transacted before. We do not know, however, how deviations in contract completeness affected performance. In other words, was it beneficial for the partners that had transacted before (and arguably had high levels of trust and relational governance) to reduce the sections of the contract that dealt with coordination?

Gathering financial and task performance data is not easy, yet it is possible (Luo, 2002; Poppo & Zenger, 2002; Ryall & Sampson, 2009; Tong et al., 2008). The multiplicity of perspectives that inform contracting imply that a greater number of performance outcomes are relevant. For example, product performance measures can evaluate on-time shipments, quality levels or defect rates, and price competiveness and value (Cannon & Perreault, 1999; Parmigiani & Mitchell, 2010); relational performance gauges satisfaction with the working relationship (Bercovitz et al., 2006); and transaction costs involve bargaining costs and delays, unfair settlements, and the like (Poppo & Zenger, 2002). Second, for some transactions, service agreements can provide defined levels of appropriate service that better codify ex ante expectations and safeguard against unobservable behavior by specifying minimally acceptable standards. By examining multiple performance measures, research can assess whether safeguarding, coordination, and adaptation are achieved and whether such objectives lead to enhanced feelings of success in the relationship.

Opportunity 2: Strategic Options, Decisions Rights, and the Evolution of Dynamic Capabilities

Our review reveals untested, potentially competing theoretical logics regarding the value of real options. Early option logic and empirical research considers how under conditions of uncertainty, low-equity investments are favored over high-equity investments, and highlights this possibility as an alternative to transaction cost logic, which generally favors ownership when there is high uncertainty and specialization. Yet recent theoretical developments that link the use of strategic options to the ex post resolution of uncertainty show that

Figure 2
Contracting: Antecedents, Perspectives, and Consequences of Contracting



ex post bargaining costs can dissipate value capture, suggesting the conventional wisdom of TCE may hold (Chi & Seth, 2008). That is, partner asymmetries in absorptive capacity, frictions in knowledge and asset markets, or misaligned incentives for knowledge sharing can erode value capture for firms that use contracts as strategic options. This logic extends conventional TCE for why ownership may be preferred to contracting and explains why a firm ex post may be forced to acquire a company that it previously ventured with—the growth option failed to materialize with contracting, and one partner must now internalize the venture to create a particular capability (see discussion of the Sprint–Clearwire venture in Poppo, 2013).

We also propose that theoretical extensions of option logic might focus on the integration of complexity and decision rights. As discussed earlier, our review of the empirical evidence shows that firms in partnerships are reluctant to relinquish control rights. In theory, allocating these rights to the typically smaller, innovative firm better aligns incentives and potentially enhances relationship performance.

One factor that may account for the mismanagement of decision rights is complexity. In this literature, complexity is defined as the degree to which subtasks assigned to different parties interact with one another (Levinthal, 1997; Simon, 1962). Two problems arise when transaction complexity increases. First, any plausible contract quickly becomes severely incomplete (Rivkin, 2000). Second, bounded rationality coupled with complexity creates a situation when ex ante contractual governance becomes inadequate and ex post decision

Table 4
Summary of Future Research Directions

Research Opportunity	Suggested Questions	Foundational Works
1. Consequences of contracting—outcome assessment	• How can the performance of contractual relationships be measured? • Does satisfaction of the working relationship reflect effective coordination? • How well does the relationship adapt to conflict or change? Is adaptation best measured as bargaining costs? • How do deviations from empirically observed levels of safeguarding, coordination, and adaptation provisions in contracts affect the performance of a transaction? How do relational governance and contextual factors affect this relationship? • What are the features and roles of service level agreements (SLAs)?	Bercovitz, Jap, & Nickerson (2006) Poppo & Zenger (2002) Reuer & Ariño (2007)
2. Strategic options, decision rights, and the evolution of dynamic capabilities	• Do transaction complexity, partner asymmetries in absorptive capability, frictions in knowledge and asset markets, and misaligned incentives make ex ante contracting more incomplete and erode the valuation of strategic options? • How can organizations reach consensual decision making (e.g., board of directors) in lieu of the above factors? • How are decision rights allocated in contractual relationships (e.g., JVs)? • Why do firms retain control rights despite research that shows such retention of rights harms relationship performance?	Chi & Seth (2008) Aggarwal, Siggelkow, & Singh (2011) Rivkin (2000) Sah & Stiglitz (1986, 1988)
3. Contextual constraints and relational capabilities	• How does the presence of multiple enforcement mechanisms affect the impact of relational capabilities on exchange performance? • What factors increase or decrease the effect of relational capabilities on exchange performance?	Gulati (1995) Poppo & Zenger (2002) Faems et al. (2008) Poppo, Zhou, & Ryu (2008)
4. Contextual constraints and contracting	• How do contextual constraints (e.g., institutional environment, geographic distance) hinder contract application and enforcement? • How do geographic and culture distance affect the choice of safeguarding mechanisms and its effectiveness?	McMillan & Woodruff (1999) Oxley (1999) Zhou & Poppo (2010)
5. Complements, substitutes, and bundles	• When do formal contracts and relational capabilities act as substitutes versus complements? • How do the main functions of contracts affect the formation of contracting and relational capabilities? Do firms primarily learn to contract regarding a certain function (safeguarding, coordination, adaptation)? • Are bundles of enforcement mechanisms necessarily better?	Poppo & Zenger (2002) Reuer & Ariño (2007)
6. Contract structure and social process	• How can the study of social process meaningfully inform management practice? • What social processes affect contract execution and outcomes?	Ghoshal & Moran (1996) Ring & Van de Ven (1994) Hennart (2006)

making becomes of paramount importance. With increasing transactional complexity (e.g., interdependence between the partners), we should not observe more complex contracts; instead, we should see more clauses in contracts that give broad decision rights to one party or specify procedures for centralized or consensual decision making (see Aggarwal,

Siggelkow, & Singh, 2011). Alternatively, more mergers may occur, for highly complex tasks are best tackled within a hierarchy (Nickerson & Zenger, 2004).

Opportunity 3: Contextual Constraints of Relational Capabilities

Although recent research shows that transactional attributes (e.g., asset specificity, uncertainty) affect the effectiveness of relational capabilities (Faems et al., 2008; Krishnan, Martin, & Noorderhaven, 2006; Mesquita & Brush, 2008; Poppo, Zhou, & Zenger, 2008), this work does not tease out the effects of relational capabilities from the safeguarding aspects of other enforcement mechanisms. More work is needed to understand relational capabilities in the context of multiple enforcement mechanisms. Future research should also consider the relational process underlying the execution of a contract. As Faems et al. (2008) show, contractual relationships can take radically different paths depending on how the parties apply the contract. Formal application of a contract under low trust may lead to adversarial relationships in which each party is suspicious of the other party's motives and tries to limit the amount of knowledge that travels across organizational boundaries for fear of expropriation. Flexible contract application under high levels of trust and relational governance is more likely to result in free knowledge exchange and creation of value that is shared by both parties. Thus, the emphasis of the contract function is likely to affect relational capabilities.

Opportunity 4: Contextual Constraints and Contracting

The conventional institutional approach to governance suggests that formal institutions, such as courts and contracts, enable economies to grow and prosper through increased scale or scope (North, 1990; Williamson, 1996) because of limits to scalability of social institutions. Personal relationships that develop through close connections, ties, and prior experiences are necessarily limited in number (North, 1990; Williamson, 1996). Yet transaction cost research generally holds the institutional environment—the formal and informal rules of the game—constant. As many firms now offshore major activities in the value chain, it seems prudent to understand the boundary constraints of formal institutions that arise from geographic and cultural distance as well as weak property rights enforcement. Empirical work in this area is nascent, yet it shows that property rights enforcement affects governance choices (McMillan & Woodruff, 1999; Oxley, 1999; Zhou & Poppo, 2010).

For example, a common story regarding the use of formal contracts in China is that Chinese managers ignore the formal contract. Other enforcement mechanisms may sometimes operate, such as a relational contract that stipulates that if Chinese manufacturers leak patented products, the exchange is terminated forever. Yet for other aspects of the contract, such as specification of process controls, geographic and cultural differences may operate as a boundary constraint of effective contracts: When partners are distant, monitoring is more costly and less likely to occur, and cultural distinctions may hinder the development of relational capabilities and communication of expectations. Moreover, relational capabilities are

less likely to be effective since their use is predicated on close relationships. Thus, how do managers control and coordinate more geographically distant transactions? Alternatively, given that many forms of product enhancements (e.g., adaptation) come from close interaction between R&D and manufacturing, are firms better off with less distance (e.g., Davidson, 2012; *Economist*, 2013)?

Opportunity 5: Complements, Substitutes, and Bundles

Our review indicates that contractual governance alone is unlikely to safeguard market exchanges. Numerous safeguards are likely operating: augmenting the exchange through positive relational capabilities, relying on reputation effects to discipline behavior given the network structure of interfirm exchanges, or using self-enforcing agreements, whether bilateral bonds or relational contracts. Future research needs to examine the multiplicity of both enforcement mechanisms and outcomes: When are bundles of mechanisms warranted or not? Is a shadow of the future sufficient to ensure cooperation, or must parties develop relational capabilities to enable effective coordination, adaptation, or safeguarding? Alternatively, when do relational contracts obviate the need or partially substitute for formal contracts?

Related to this, our review indicates that there is more support for the complementarity of relational capabilities and contracts than there is for them being substitutes. Extant research does not consider the specific functions that contracts perform when they complement or substitute for relational governance. Future researchers should investigate these functions when they study the complementarity/substitution relationship between relational capabilities and formal contracts (see Reuer & Ariño, 2007).

Opportunity 6: Contract Structure and Social Process

Structuring of contracts and safeguarding parties against risk and opportunistic behavior underlies the study of interfirm contracting: Managers should structure exchanges by using contract design to align incentives and controls. Process work on interfirm contracting is thus generally neglected or undervalued, especially in terms of generating insights that influence managerial practice (Hennart, 2006). Yet positive motivation is necessary to promote creativity and superior effort; focusing only on the negative can create a self-fulfilling prophecy (Foss, 1996; Ghoshal & Moran, 1996). It is important to understand how to structure contracts to promote social processes that enhance outcomes. Weber et al. (2011), for instance, examine contracts with provisions to terminate the contract early versus those to extend the contract. The authors' field interviews provide evidence that early termination provisions inhibit flexibility and creativity, while contracts with extension provisions promote creativity, suggesting that contract framing may psychologically affect how parties behave in a relationship.

While fairness's influence on interfirm relationships, such as building trust and commitment, and exchange outcomes (Das & Teng, 1998; Ring & Van de Ven, 1994) is widely acknowledged, there has been little research on how fairness influences contracts (Arino & Ring, 2010; Husted & Folger, 2004). Yet, recently Poppo and Zhou (2013) empirically demonstrate that exchange performance is highest when contracts and fairness exist and to

maximize fairness managers must complement contracts with appropriate levels of monitoring or socializing. Thus, future research on contract function will benefit from considering social process.

Conclusion

Safeguarding is important in a world that is far removed from the "moral utopia" described by Foss (1996). Yet to make research on interfirm contracts more relevant to actual practice, we believe that researchers should consider how contracts can facilitate coordination and adaptability. This framework for decision making is very different from a simple focus on safeguarding: Managers and researchers must determine which aspects of the exchange need to be managed (e.g., coordination) and measure outcomes for each aspect. Furthermore, because contracts are often viewed as legal tools that protect the firm in a relationship (Contractor & Ra, 2002; Luo, 2005, 2007), scholars and managers may be skeptical that contracts do more than formally enforce agreements. By showing how contracts can improve coordination and adaptation, we hope to persuade these skeptics. Third, we hope that future research informs our understanding of the constraints on effective contracting and of alternative, potentially complementary enforcement mechanisms such as relational contracts. Managers can build relational contracts through frequent interaction, cospecialized assets, and behavioral transparency. Nonetheless, such effort is risky; when should a partner voluntarily disclose valuable, private information or share documentation of process controls? In short, the future holds many interesting potential avenues to expand on our understanding of contracts between firms and learn how such contracts shape partner behaviors, satisfaction, and performance.

Appendix

Method for Identifying Research Related to Contract Functions

We searched widely to identify research publications related to contract functions. Our initial approach included reviewing a variety of articles and reviews (e.g., Eckhard & Mellewigt, 2005; Furlotti, 2007; Klein Woolthuis et al., 2005; Masten & Saussier, 2000) relating to contracting in interfirm relationships. This work identified contracting's three functions. Once we agreed on these functions, we used a variety of search terms across social science databases to identify research. We included "CONTRACT" or "CONTRACTS" in the search, along with the following keywords in different iterations: "COORDINATION," "COOPERATION," "COOPERAT*," "SAFEGUARD*," "ENFORCEMENT," "CONTROL RIGHTS," "FUNCTIONS," "CONTINGENCIES," "CONTINGENCY," and "ADAPTAT*." Our review included articles in all journals to collect as much research as possible. To ensure that we did not miss key research, we also examined abstracts of articles that cited seminal works in this area (e.g., Mayer & Argyres, 2004) to identify any additional research.

For a research publication to be included, three criteria had to be met: (a) it had to deal with contracts between at least two firms, (b) it had to include data on actual contracts examined, whether in a case-based fashion or with statistical analysis, and (c) it had to focus on

how the contract affected the relationship (e.g., if specifying roles and responsibilities leads to greater satisfaction) rather than on how attributes or characteristics of the transaction affected contract design. These criteria helped us identify research that details contracts' three functions.

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