

What Drives Contract Design in Alliances? Taking Stock and How to Proceed

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Abstract

We collect and assess prior empirical evidence on contract design in alliances that has been published since Parkhe's (1993) seminal study on inter-firm contracts. We elaborate on the effects of transaction-related factors, experience gained from prior relationships, and deliberate learning efforts on contracts. Our paper offers three contributions. First, we systematically review the existing literature on alliance contracts and summarize our findings. Second, while prior research has traditionally focused on contractual complexity, we place the content of contracts center stage and identify three contractual functions. While existing studies on contractual functions predominantly refer to safeguarding as a response to appropriation concerns, we also consider coordination and contingency adaptability as outcomes of adaptation concerns. Third, we disentangle the differential influences of previous experiences on distinct contractual functions and show that experience gained from prior relationships has different effects on safeguarding and contingency adaptability than on coordination. Overall, we add to the systematization of the current debate on alliance contract design and trace promising avenues for future research on the impact of transaction- and experience-related factors on the complexity and content of alliance contracts.

Keywords: alliance contracts, alliance governance, contract design, transaction costs, experience

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1 Introduction

Alliance contracts are a component of overall alliance governance systems (Albers 2010). They are written agreements that are legally binding and specify the conditions for a transaction between parties (Lyons and Mehta 1997; Ménard 2004; Weber and Mayer 2011). Researchers increasingly refuse the traditional view of contracts as unidimensional legal safeguarding mechanisms (Parkhe 1993) and see them as multifunctional agreements (e.g. de Jong and Klein Woolthuis 2008, 2009; Furlotti 2007; Susarla et al. 2009; Weber and Mayer 2011) that support the control of alliance partners' behavior and facilitate the coordination of their joint activities (Hoetker and Mellewigt 2009). Being aware of the high risk of alliance failure (e.g. Bleeke and Ernst 1991; Duysters et al. 1999; Park and Ungson 2001), we argue that alliance performance is not only affected by the *amount* of clauses included in a contract but also by their *content* that specifies the functions that an alliance contract serves. In addition, reflecting alliance partners' expectations for future transactions and their shared history of prior ties, contracts are likely to *evolve* over time (e.g. Batenburg et al. 2003; Eckhard et al. 2009; Reuer et al. 2002). Thus, in our literature review, we raise the question of how transaction-related factors and experience gained from prior relationships affect the complexity and content of alliance contracts.

Our paper contributes to alliance management research in three ways. First, to our knowledge, we provide the first comprehensive literature review on alliance contracts that fulfills the standards set by David and Han (2004) and systematically analyzes and summarizes our current knowledge on contract design. Second, while prior research has traditionally focused on contractual complexity, we place the content of contracts center stage. Prior studies have already identified separate contractual functions (e.g. de Jong and Klein Woolthuis 2009; Reuer and Ariño 2007; Ryall and Sampson 2009). We synthesize these prior approaches and embed our classification of contractual functions into a theoretical framework based on transaction cost economics (TCE). TCE specify the problem potential of transactions and provide indications for how exchange hazards can be mitigated by contracts (Williamson and Ouchi 1981). Existing studies predominantly refer to safeguarding as a response to appropriation concerns. We additionally consider coordination and contingency adaptability that are outcomes of coordination and adaptation concerns. Third, drawing on evolutionary theory, we disentangle the differential influences of previous experiences with alliance management on distinct contractual functions and argue that experiences gained from prior relationships have different effects on safeguarding and contingency adaptability than on coordination. Although evolutionary theory does not explicitly focus on governance issues, it helps to explain contract-making, as it provides insights into why and how the complexity and content of alliance contracts are likely to evolve over time (Kale and Zollo 2005). We thus follow Argyres' (2011, p. 1141) claim that "capabilities and transaction cost perspectives are not distinct to the extent that firms only learn to efficiently govern their transactions through actual experience".

The remainder of this state-of-the-art article is structured as follows. First, we elaborate on the identification, selection, and analysis of studies on contract-making in inter-organizational relationships. Second, adopting a static perspective on alliance contracts and drawing on TCE, we outline the theoretical foundations of contractual complexity and contractual functions and classify the identified studies accordingly. Third, considering the evolution of contracts with the same or other partners over time, we adopt a dynamic perspective on contract design and integrate empirical evidence on the impact of different types of experience and deliberate learning efforts on alliance contracts. Finally, drawing on our analysis, we discuss our findings and elaborate on implications for future research on contractual functions and dynamics.

2 A Systematic Selection and Assessment of Studies on Alliance Contracts

Scholars have previously approached the analysis of contract design in four review papers: Sobrero and Schrader (1998) juxtapose issues pertaining to the contractual coordination of inter-firm relationships to those concerning procedural coordination. De Jong and Klein Woolthuis (2008) outline extant findings on contract research in high-tech alliances, while Furlotti (2007) focuses on the transactional and procedural elements of contracting. Weber et al. (2009) complement the traditional economic view with psychological and sociological lenses that permit the exploration of additional contract roles and more unconventional data sources and methods. In line with these authors, we solely concentrate on formal contracts and the information that they provide in terms of contractual clauses. In contrast to them, we additionally show how contracts evolve over time, considering effects stemming from prior ties on contractual complexity and contractual functions.

Following David and Han's (2004) objective and rigorous approach, we solely focus on published studies, since they meet high quality standards as a result of systematic peer review processes (Light and Pillemer 1984). We selected the top-twenty management journals, ranked by their Citation Impact Factor (CIF) for the year 2008 in the management subset of the ISI Web of Knowledge and combined this ranking with the top-twenty journals included in the Organization Theory & HR Management subset of JourQual2 published by the German Association for Business Research [Verband der Hochschullehrer für Betriebswirtschaft e.V.] in 2008.

Overall, we analyzed the following journals: *Academy of Management Review*, *Academy of Management Journal*, *MIS Quarterly*, *Strategic Management Journal*, *Journal of Management*, *Organizational Research Methods*, *Journal of International Business Studies*, *Academy of Management Learning & Education*, *Administrative Science Quarterly*, *Organizational Behavior and Human Decision Processes*, *Research Policy*, *Journal of Product Innovation Management*, *Organization Science*, *Journal of Management Studies*, *Research in Organizational Behavior*, *Journal of Organizational Behavior*, *Journal of Operations Management*, *Information & Management*, *Journal of Management Information Systems*, *Management Science*, *Journal of Law, Economics, & Organization*, *Journal of Economic Behavior & Organization*, *Journal of Labor Economics*, *Journal of Applied Psychology*, *Research in the Sociology of Organizations*, *Journal of Strategic Information Systems*, *Organizational Behavior and Human Performance*, *Human Relations*, *Journal of Institutional and Theoretical Economics*, *Journal of Risk and Uncertainty*, *Strategic Organization*, *Journal of Vocational Behavior*, *Personnel Psychology*, *Journal of Behavioral Decision Making*, and *Managementforschung Jahrbuch*.

We limited our review of these journals to the volumes 1993-2010, starting with Parkhe's (1993) pioneering research on inter-firm contracts. Parkhe's (1993) work is "a landmark study" (de Jong and Klein Woolthuis 2008, p. 286), because it provides the first measure of contractual complexity that has proved to be influential for many subsequent studies (e.g. Barthélemy and Quélin 2006; Deeds and Hill 1998; Lui and Ngo 2004; Reuer and Ariño 2002). According to David and Han (2004), we conducted an 'abstract and title'-search of the specified journals with pre-selected keywords in order to identify relevant studies.

We defined three criteria for the inclusion of studies. First, we were interested in studies on contracts as mechanisms for coping with cooperation risks instead of alternative means towards that end, such as the investment of equity. To exclude the vast number of studies on overall governance decisions, we decided that at least one of the keywords CONTRACT* or AGREEMENT* should be mentioned in an article's title or abstract. Second, in order to limit

the variety of inter-organizational relationships encompassing alliances and comparable forms of supply relations (Gulati 1998; Mayer and Argyres 2004), we introduced another pool of keywords: ALLIANCE*, COOPERAT*, COLLABORAT*, INTERACT*, PARTNER*, INTER-FIRM or INTER-ORGANIZATIONAL. Third, we concentrated on empirical studies, considering both qualitative and quantitative approaches (Shelanski and Klein 1995). We further included the keywords EMPIRICAL*, DATA*, TEST*, STATISTICAL*, EVIDENCE, FINDING* and RESULT*, and added ANALYSIS. Both INTER-FIRM and INTERFIRM and INTER-ORGANIZATIONAL and INTERORGANIZATIONAL were used. An asterisk (*) indicates that variations of the ending of the word are permitted (David and Han 2004).

The first step of our selection process resulted in 220 articles from 25 journals. In a second step, we read the abstracts. To be retained, an article had to satisfy two criteria: the indication of substantive relevance (contractual form of inter-firm relationships) and empirical analysis. This step resulted in a sample of 68 articles from 19 journals. These articles were read entirely in our last filter process that led to our final sample of 38 studies originating from 16 journals. We cite additional studies that do not follow our selection criteria, whenever they are beneficial in clarifying aspects or provide innovative approaches (e.g. de Jong and Klein Woolthuis 2008; Dekker 2004; Fiedler et al. 2010; Irlenbusch 2006; Mayer and Bercovitz 2008; Mellewigt et al. 2007; Reuer et al. 2006).

While Ariño and Reuer (2004) assess the functions and dynamics of contracts based on the differentiation between alliance governance and alliance contract, the clarification of the distinct meanings of the constructs contractual complexity and contractual completeness, and factors affecting contractual complexity, we classified the identified studies into three related but different categories: first, studies referring to the *existence of contracts* without specifying the amount (i.e., contractual complexity) or content (i.e., contractual functions) of clauses, second, studies pertaining to *contractual completeness and/or complexity*, and third, studies shedding light on the content of alliance contracts, i.e., *contractual functions*.

The third category requires a more fine-grained classification, since contracts provide mechanisms to cope with the relational and performance risks that characterize all inter-organizational relationships (Casciaro 2003; Das and Teng 1996; Furlotti 2007): Owing to the behavioral assumption of opportunism (Williamson 1985), the relational risk is concerned with the likelihood that an alliance partner does not comply with the spirit of cooperation and seeks his self-interest. Thus, the most salient contractual function is *safeguarding* of investments and property against misappropriation by a partner. Performance risks refer to the likelihood that the goals of an alliance may not be achieved as agreed. On the one hand, these risks can be due to partner firms' potential incompetence when they are faced with complex, ill-structured and uncertain tasks; on the other hand, they result from market and technological uncertainties. To minimize them, contracts provide a definition of the parties' roles and responsibilities, acting as a *coordination* device to align expectations (de Jong and Klein Woolthuis 2008; Mayer and Argyres 2004). Contracts additionally serve *contingency adaptability* as a third purpose, because unforeseeable challenges may emerge from the market or the technological environment in the post-formation alliance phase. It pertains to the specification of principles or guidelines on how to handle those situations and allocate risk (de Jong and Klein Woolthuis 2008; Furlotti 2007; Luo 2002). These categories are reflected by the structure of Section 3. Some of the selected studies reveal that contracts dynamically evolve over time, as alliance experience increases and organizations purposefully engage in learning to contract. We added a fourth category for these studies reflecting contractual dynamics driven by experience and learning that are described in Section 4.

Table 1 provides an overview on the results of our categorization and assessment of prior evidence. Studies that refer to more than a single category are included in multiple categories.

Insert Table 1 about here

3 Contractual Complexity and Functions: The Dimensionality of Alliance Contracts

Alliance governance and alliance contracts are interrelated but differ in their scope and the purposes that they serve. The former describes the overall form of an inter-organizational relationship, while the latter stipulates the structure and content of the agreement between alliance partners (Albers 2010; Hoetker and Mellewigt 2009). According to TCE (Williamson 1975, 1985), the rationale for contracts is an alignment of partners' expectations, intentions, and incentives prior to a transaction (Argyres and Mayer 2005; de Jong and Klein Woolthuis 2008; Furlotti 2007) under conditions of uncertainty about future states of nature and future partner behavior (Argyres et al. 2007; Ariño and Reuer 2004). Contract design aims at minimizing ex post-transaction costs that are due to contractual incompleteness and opportunistic partner behavior (Susarla et al. 2009).

We have analyzed studies that either refer to issues associated with contractual completeness and/or complexity or provide more details on the purposes that contracts fulfill. Figure 1 illustrates our argumentation.

Insert Figure 1 about here

3.1 The Existence of Formal Contracts

Contracts are an effective governance mechanism that ensures that partner firms perform as agreed (Willcocks et al. 1999) and feel committed to the delivery of services and products stipulated in this written agreement (Heiskanen et al. 2008). We have identified eleven studies that refer to the mere existence of contracts. Their use is affected by various factors: For instance, focusing on contractual agreements in international subcontractor relationships, Andersen (1999) shows that the use of formal contracts for technological collaboration depends on subcontractors' development and export-orientation. In addition, contracts can serve the purpose of accomplishing expansion objectives and safeguarding intellectual property: Reuer and Tong (2005), e.g., focusing on the use of explicit call options in international joint ventures, show that that they help to secure future expansion claims and are less likely to be applied in host countries in which intellectual property rights are respected. The consideration of equity claims accompanies contract design. In a longitudinal case study, Ariño and De La Torre (1998) show that the contractual renegotiation process is driven by an acceptable equity boundary, whereby minor deviations can easily lead to a mutually agreed adaptation of contractual terms. Thereby, trust has an impact on the process and outcomes of renegotiations. It is a precondition for successful renegotiation if major changes are required, but formal contracts can inhibit the development of trust (Malhotra and Murnighan 2002).

Most studies on contract design draw on data from the U.S. or Europe. Okamuro (2007) provides an exception. Using data on cooperative R&D in Japanese small and medium-sized enterprises, he investigates the impact of rules of cost and outcome sharing as a component of the cooperation contract on the technological and financial performance of a joint R&D project. His findings reveal that, the more costs and outcomes are shared among partner firms' capability and contribution, the higher is the likelihood of alliance success. Wright and Locket (2003) also rely on an innovative research setting: Concentrating on horizontal relationships

between syndicate partners as a special form of alliances, they reveal that, although contracts are concluded, they are mainly used as backdrops to relationships.

Contracts can be more or less formalized. For instance, Aulakh and Gençtürk (2008), referring to exporter-importer relationships, show that the more an exporter pursues product standardization, the more s/he depends on the importer's specific product and service offerings and country-specific experience; and the higher the extent of export intensity, the higher is the degree of formalization. Conversely, environmental uncertainty promotes the use of less formalized contracts. The contract type chosen reflects the risk allocation among alliance partners. While, e.g., in outsourcing relationships a fixed-price agreement means that a vendor bears a higher risk, in a time and materials contract, the client must mainly cope with the risk of cost and schedule overruns (Ramachandran and Gopal 2010).

If mutual trust is absent as it is likely in "cupid alliances" that are established by a third party that benefits from the brokered and rather involuntary relationship between other firms (Ring and Van de Ven 1994), alliance partners can conclude contracts that serve the purpose to overcome this lack (Stephens et al. 2009). However, binding contracts can have a crowding out effect, such that voluntary cooperative behavior becomes less likely. The costs of drafting a contract as an ex ante-mechanism to facilitate an alignment of partners' goals will be acceptable, if positive returns are expected from it, such as a reduction of uncertainty and ex post-costs driven by haggling and assigning blame for problems (Argyres et al. 2007; Dyer and Chu 2003; Ring 2002). Hence, the degree of detail in a contract is a choice variable (Crocker and Reynolds 1993; Mayer and Bercovitz 2008) that should appropriately be aligned with the underlying transaction attributes and the resultant exchange hazards (Williamson 1991), thus economizing on transaction costs (Saussier 2000).

Both contractual completeness and complexity concern the degree of detail in a contract. A contract will be complete, if there is "no possibility to improve efficiency by an ex-post adjustment of actions" (Furlotti 2007, p. 78). The associated parties need to forecast all potential contingencies that might affect the relationship and specify ex ante the appropriate governance mechanisms for each of them (Ariño and Reuer 2004). Though appealing, it is unrealistic that practitioners can conceive of all unanticipated contingencies, since they often lack the required background information on relevant transaction attributes. Fiedler et al. (2010) show that alliance partners will even intentionally agree upon incomplete contracts, if they expect that their partners will not be likely to behave opportunistically, trust is relatively high, the alliance is of minor strategic importance, and power is equally balanced between partners. Contracts are likely to act as a foundation of collaborative relationships. The evolution of a relationship depends on partner firms' way to cooperate and establish rules and routines that are difficult to capture in contracts at the outset of the alliance (Kern and Willcocks 2000). Moreover, incomplete contracts between firms may even outperform complete ones (Irlenbusch 2006).

Being aware that contractual completeness can hardly be achieved and may even be intended, researchers can either differentiate between tightly or loosely drafted contracts instead (e.g. Samaddar and Kaijaya 2006) or relax the assumption of completeness and rather examine contractual complexity.

3.2 Contractual Complexity

Contractual complexity refers to the number, elaborateness and stringency of clauses that are included in a contract (Parkhe 1993; Reuer and Ariño 2003, 2007). Clauses can easily be assessed by reading the document that formalizes the regulations, processes, and policies that guide the relationship, e.g. incentive, price or termination clauses (Argyres et al. 2007; Aulakh and Gençtürk 2008; Barthélemy and Quélin 2006). We have identified fifteen studies

that involve tests of contractual complexity with regard to its antecedents or outcomes. In these studies, multi-item measures (e.g. Parkhe 1993) which comprise clauses that are pertinent in an industry-specific research setting (Helm and Kloyer 2004; Lui and Ngo 2004; Saussier 2000) are more popular than single-item measures (Poppo and Zenger 2002; Reuer and Ariño 2007).

The opportunism and damage potential of a transaction are likely to enhance ex ante-alliance management (Batenburg et al. 2003). More precisely, specificity, internal and external uncertainty, and prior relationships act as the main *antecedents* of contractual complexity in the selected studies. Although existing evidence mainly confirms that high asset specificity promotes high levels of contractual complexity (e.g. Anderson and Dekker 2005; Barthélemy and Quélin 2006; Poppo and Zenger 2002; Reuer and Ariño 2007), some studies do not support this relationship (e.g. Reuer et al. 2006; Sobrero and Roberts 2002). Focusing on internal uncertainty, Anderson and Dekker (2005) provide evidence for a significant positive effect on contractual complexity. Regarding external uncertainty, Saussier (2000) shows that it exerts a significant negative influence on contractual complexity, while Barthélemy and Quélin (2006) demonstrate that it has a positive significant effect. Different results also emerge for the effect of prior relationships on contractual complexity, ranging from a positive (Poppo and Zenger 2002) to a negative influence (Batenburg et al. 2003) or no effect on contractual complexity (Reuer and Ariño 2007). Owing to different schools of thought (Puranam and Vanneste 2009) researchers have raised contradictory hypotheses on the impact of prior ties between alliance partners. While partner-specific learning is mainly found to increase contractual complexity (e.g. Mayer and Argyres 2004), mixed results are reported for trust derived from prior ties, ranging from support for a substitutive (e.g. Gulati 1995) to support for a complementary (e.g. Poppo and Zenger 2002) relationship between trust and contracts or the observation that trust and contracts act as both substitutes and complements (Mellewigt et al. 2007).

Examining the *outcomes* of contractual complexity, several studies reveal a significant positive effect on performance (Luo 2002; Poppo and Zenger 2002), while others report opposite findings (Helm and Kloyer 2004; Sobrero and Roberts 2002). Considering the likelihood of alliance renegotiation as a non-financial, alternative outcome of contractual complexity, Arino et al. (2008) show that, the higher contractual complexity is, the less likely a contract will be renegotiated.

The unidimensional conceptualization of contractual complexity is likely to conceal that different contractual clauses serve different purposes. Reuer and Ariño (2007) who discover that contractual complexity comprises distinct dimensions with unique drivers that are masked in overall complexity measures, corroborate this point. Similarly, analyzing a long-term alliance contract, Dekker (2004) shows that it serves two purposes, namely coordination and appropriation concerns. We thus combine a discussion of the purposes that alliance contracts serve (Ring 2002) with a review of studies that explicitly address multiple dimensions of contracts.

3.3 Contractual Functions

We have identified twelve studies that either theorize on distinct functions but do not measure them separately or use distinct measures for individual contractual functions. For instance, Avadikyan et al. (2001) consider contracts as highly codified inter-organizational rules that, apart from their main function as incentive mechanisms, contain a coordination function and a cognitive, learning-activating function. Mellewigt et al. (2007) hypothesize that the use of contracts serves control and coordination functions and is driven by distinct transaction

attributes. However, similarly to Ariño et al. (2008), they use an overall unidimensional contractual complexity variable for measuring the content of contracts.

In addition to an overall complexity concept, Reuer and Ariño (2007) use separate measures for distinct contractual functions, namely enforcement and coordination. Likewise, Anderson and Dekker (2005) assign 24 clauses to four contractual functions that are labeled as dimensions of management control, and measure them independently. Ryall and Sampson (2009) categorize contractual elements into three separate dimensions, namely contract detail, monitoring and penalties, and measure them with different clauses. Argyres et al. (2007) distinguish between a task description and a contingency planning function and use distinct measures for each variable. In doing so, they apply some ideas provided by Luo (2002) who suggests a twofold conceptualization of contractual complexity that comprises both a task specificity dimension clarifying the parties' roles and responsibilities, and a contingency adaptability dimension specifying action plans for handling unanticipated future developments. Hagedoorn and Hesen (2007) provide a qualitative analysis of six contracts and interview data for technology partnerships in the form of equity joint ventures, non-equity relationships, and licensing. Depending on the type of partnership, adaptation clauses, damage measures, warranties, conflict resolution mechanisms, distribution of property rights, and revision clauses are included in the contracts to different extents. Conversely, Susarla et al. (2009, 2010) focus on types of contracts for specifying their functions. They differentiate between fixed-price contracts that stipulate specific performance expectations and incentives from the outset of the exchange (high-powered incentives), and time and materials contracts that specify the products and services to be supplied and open up the opportunity for adaptation later on (low-powered incentives).

These approaches illustrate the need for an analysis of alliance contracts with reference to their distinct functions. Thereby, safeguarding, coordination, and contingency adaptability coincide with different attitudes towards an alliance partner: while appropriation concerns are stimulated by an adverse perspective towards the partner, parties jointly face coordination concerns. Adaptation concerns arise out of commercial contingencies and make contractual clauses necessary that account for an either collaborative perspective, e.g. finding new sales opportunities in case of declining demand, or an adverse attitude, e.g. solving a conflict on how to share increasing input prices, e.g. for raw materials (Carson et al. 2006; Luo 2002; Mayer and Bercovitz 2008). Based on TCE and a static perspective on alliance contracts, specific transaction attributes are likely to nurture the use of safeguarding, coordination and contingency adaptability clauses, respectively. Below we outline studies that examine the pre-specified contractual functions and their antecedents.

3.3.1 Safeguarding

Safeguarding of investments and property against misappropriation by a partner, sometimes labeled as enforcement or incentive function, takes center stage in many studies (e.g. Kern and Willcocks 2000; Mellewigt et al. 2007; Reuer and Ariño 2007). The TCE-based rationale for safeguarding against the partner's potential opportunism is the traditionally most accepted motivation for writing a contract (Williamson 1985). Relying on the assumption that all economic actors are potentially opportunistic (Rindfleisch and Heide 1997; Wathne and Heide 2000), alliance partners face a relational risk (Das and Teng 1998). This relational risk and strategic and task uncertainties will lead to severe exchange hazards, if the underlying transaction is characterized by certain attributes (Casciaro 2003; Das and Rahman 2010).

Among these attributes, asset specificity is especially important (Shelanski and Klein 1995). If firms make specific investments in a transaction that have little alternative value outside the relationship, they put themselves at the risk of value appropriation by their partner

(Williamson 1991). In order to cope with appropriation concerns and enforce a transaction, contractual clauses alluding to financial incentive systems and intellectual property rights can be implemented (Dekker 2004). They ensure that the partner fulfills his agreed upon tasks instead of unilaterally terminating the relationship after s/he has achieved his private goals. Anderson and Dekker (2005) illustrate that specific investments drive the integration of clauses that deal with both rights assignment and legal recourse that, seen as a bundle, fulfill a safeguarding function. Avadikyan et al. (2001) confirm that the prevention of conflict and opportunistic behavior through contractual provisions plays an important role. Ryall and Sampson (2009) identify clauses for penalties for underperformance as a dimension in their sample of contracts, that closely resembles the safeguarding function.

Typical contractual clauses assigned to safeguarding deal with (intellectual) property rights (e.g. Ariño et al. 2008; Hagedoorn and Heslen 2007), confidentiality (e.g. Ariño et al. 2008; Reuer and Ariño 2007), service scope and performance guarantees (Susarla et al. 2009, 2010), unilateral early termination (e.g. Argyres and Mayer 2005; Mayer 2004), and dispute resolution (e.g. Argyres and Mayer 2005; Hagedoorn and Heslen 2007; Reuer and Ariño 2007). Thereby, contract clauses can either be verifiable or non-verifiable. While verifiable safeguards can be measured with the time span for which the agreement is concluded, non-verifiable ones refer to the partners' expectations regarding relationship length and the percentage of production schedules that remain unchanged (Srinivasan and Brush 2006).

Based on our findings, we suggest that asset specificity increases the potential harm of opportunistic partner behavior and makes safeguarding more likely.

3.3.2 Coordination

Studies increasingly emphasize the coordination function of contracts (e.g. Avadikyan et al. 2001; Dekker 2004; Mellewigt et al. 2007; Ryall and Sampson 2009). Contracts serve a coordination function with regard to the performance risks inherent in the task at stake (Casciaro 2003). The performance risk, i.e., the risk of failure to achieve expected outcomes of a transaction due to highly complex, uncertain tasks or a lack of competence to cope with these challenges, is jointly faced by all alliance partners. Complex, decomposed tasks that are to be completed across organizational boundaries pose significant coordination concerns, since the division of labor and the interface of activities and products needs to be harmonized (Dekker 2004; Gulati and Singh 1998). While appropriation concerns deal with an alignment of the parties' interests, coordination concerns refer to the difficulties in and necessity of aligning actions (Gulati et al. 2005; Puranam and Vanneste 2009). Thus, an antecedent of coordination concerns is task interdependence which highlights the administrative challenges of coordinating decomposed tasks between partners (Furlotti 2007; Gulati and Singh 1998). They will be particularly pertinent, if a transaction is characterized by a high degree of reciprocal task interdependence that involves a frequent and simultaneous exchange of outputs between parties (Thompson 1967). For instance, the higher the knowledge interdependence between cooperating firms is, the higher are the difficulties to coordinate the exchange due to the enhanced likelihood that an alliance partner's performance is observable but not verifiable and the initial lack of well-proven practices to collaborate across organizational boundaries (Kern and Willcocks 2000; Susarla et al. 2010).

Contracts can play a vital role in mitigating coordination concerns as a means of planning the collaboration and clarifying partners' mutual expectations (Mayer and Argyres 2004; Puranam and Vanneste 2009). For instance, a clear delineation of partners' roles and responsibilities helps to reduce complexity and avoid costly misunderstandings and mistakes (Ryall and Sampson 2009). Contracts can further serve coordination purposes by specifying decision rights, information duties, boundary spanners, gate-keepers or other kinds of

interfaces between parties (Mellewigt et al. 2007). Put differently, contracts fulfill a coordination function, since they force firms to consider details of their collaboration already at the outset and therefore act as a kind of blueprint or technical aid (Ryall and Sampson 2009) and facilitate the establishment of norms of collaboration (Kern and Willcocks 2000).

As compared to the contractual provisions assigned to safeguarding, clauses referring to coordination are less easily enforceable by external institutions (Ryall and Sampson 2009). While the former focus on potentially negative aspects of inter-organizational relations, coordination clauses provide guidance on more positively connoted aspects such as collective goals and the means to achieve them. Coordination clauses describe responsibilities and tasks (e.g. Argyres et al. 2007; Dekker 2004), interfaces for partner interaction (e.g. Susarla et al. 2010), reporting procedures (e.g. Argyres and Mayer 2005; Reuer and Ariño 2007), project schedules and milestones (e.g. Anderson and Dekker 2005; Avadikyan et al. 2001; Ryall and Sampson 2009) or the designation of specific persons as dedicated alliance managers (e.g. Dyer et al. 2001; Ryall and Sampson 2009).

Overall, we suggest that the use of coordination clauses is contingent on the interdependence of the tasks that are to be performed in an alliance, i.e., the complexity of contractual coordination is likely to be positively related to task interdependence.

3.3.3 Contingency Adaptability

Both safeguarding and coordination aim at aligning incentives and clarifying partners' responsibilities prior to a transaction. Since the subsequent alliance governance and post-formation phases (Kale and Singh 2009) take place in a more or less uncertain future, additional performance risks arising from uncertainty cannot be foreseen and challenge the alignment of incentives and responsibilities, that has initially been achieved and codified in a contract (Mayer and Bercovitz 2008). To cope with performance risks caused by, e.g. unforeseeable technological or economic developments (Carson et al. 2006; Puranam and Vanneste 2009) that involve considerable transaction instability, proponents of TCE recommend the integration of risk-preventive terms. Since uncertainty bears the potential of high ex post-transaction costs, it should be reduced to a minimum by accepting costs for the establishment of effective ex ante-governance mechanisms. Contracts can serve the purpose of contingency adaptability which aims at specifying principles and guidelines for how to handle unanticipated contingencies that might arise at a later stage of the collaboration (Kale and Singh 2009; Luo 2002; Mayer and Bercovitz 2008). This contractual function refers to changes of commercial contingencies in the transaction environment, e.g. fluctuations in demand, supply or technology (Gulati et al. 2005; Puranam and Vanneste 2009), and the way how the parties are expected to respond to this transaction instability (Mayer and Bercovitz 2008). Therefore, adaptation concerns can be considered as the main driver for the use of contingency adaptability clauses in alliance contracts.

Contingency adaptability can be addressed in the form of mutually agreed actions for dealing with unexpected events or as procedures and guidelines on how to handle dynamically evolving circumstances or overcome conflicts. Those clauses deal with force majeure (e.g., Hagedoorn and Hesen 2007; Luo 2002), price adjustment (e.g. Carson et al. 2006; Crocker and Reynolds 1993; Mayer and Bercovitz 2008), or engineering change procedures (e.g. Argyres and Mayer 2005), reflecting situations that are characterized by transaction instability.

Drawing on our review, we suggest that transaction instability in terms of, e.g., volatile markets and technological uncertainty promotes the inclusion of contingency adaptability clauses, since they support an equitable adaptation of the exchange relationship, when these challenges emerge.

Up to now, studies investigating the contingency adaptability function of contracts are relatively scarce. Our knowledge on its effect on alliance performance is also limited and mainly relies on Luo (2002) who provides evidence on the positive effect of contingency adaptability on subsequent cooperation and alliance performance. Moreover, contingency adaptability and coordination may act as complements, since firms simultaneously learn to define their collaborative task and address potential future problems (Argyres et al. 2007). Furthermore, the form and extent of contingency adaptation clauses differ depending on the alliance form: While licensing contracts consider natural catastrophes and acts of war as events that allow for suspension of obligations for only a short period prior to the termination of the cooperation, partners in equity and non-equity alliances are more likely to accommodate the harmful effects of those events and delay the final termination of the partnership according to revision clauses to the occurrence of supervening events (Hagedoorn and Hesen 2007).

Argyres et al. (2007) and Luo (2002) demonstrate that prior ties have a positive effect on the extent of contingency adaptability clauses. Trust-related arguments on the role of prior ties would assume an opposite, thus weakening effect on contractual planning for contingencies (Puranam and Vanneste 2009). This argumentation emphasizes the idea that contracts may dynamically evolve, indicating that experience as a consequence of prior ties exerts an influence on the likelihood of inclusion of and changing emphasis on contract clauses over time.

4 Contractual Dynamics: The Impact of Experience and Learning on the Evolution of Alliance Contracts

Existing empirical evidence on the impact of alliance experience on the type of alliance chosen is contradictory. While Teng and Das (2008) show that partner firms with more alliance experience between themselves and other companies are likely to form contractual alliances, Ariño et al. (2008) reveal that prior ties foster the choice of equity-based alliances. Findings by Sampson (2004b) corroborate that any type of inter-organizational relationship helps firms to improve their skills in coordinating activities across boundaries, make appropriate contract design choices, assess performance outcomes, and deal with partner-specific characteristics. Inconsistent findings can be a consequence of different measurement approaches in prior studies that impede their comparability. For example, while Kale and Singh (2007) and Hagedoorn et al. (2010) measure alliance experience by using a firm's number of existing alliances during a specified time period, Gulati et al. (2009) differentiate between experience types and measure them with the accumulated number of all prior alliances with either the same or all alliance partners up to the day prior to a recent alliance announcement.

We distinguish between partner-specific and firm-level general partnering experience, since both types of experience have been examined as antecedents of alliance contract adaptations (e.g. Ariño et al. 2008; Reuer and Ariño 2002; Reuer et al. 2002) and contractual complexity (e.g. Ryall & Sampson 2009). We argue that different types of alliance experience do not only exert an influence on the type of alliance chosen as the aforementioned studies illustrate, but, in particular, they differentially affect the evolution of contractual functions. Previous alliance experience is *partner-specific*, if it is a result of prior ties with the same partner firm. It is *general*, if it encompasses all prior relationships with any firm (Gulati et al. 2009; Hoang and Rothaermel 2005).

Overall, we have identified twelve studies that focus on different experience types that exert an influence on the evolution of alliance contracts. The effects of the specified

experience types on alliance contracts are different. On the one hand, experience can lead firms to design new and subsequent contracts more effectively in anticipation of circumstances that can occur in the post-formation alliance management stage. On the other hand, prior experiences promote firms' capacity to modify existing contracts during alliance evolution (Reuer et al. 2002). Studies on partner-specific experience predominantly allude to the design of subsequent contracts with the same partner (e.g. Mayer and Argyres 2004). Thereby, Reuer et al. (2002) show that this experience type does not significantly drive alterations of extant contracts but fosters ex post-governance changes in existing alliances. This finding may be due to the fact that the authors do not differentiate between contractual functions. Studies on general partnering experience suggest that learning from prior contracts with any partner results in subsequent adaptations of extant contracts (e.g. Reuer et al. 2002). Findings on the impact of general partnering experience on the subsequent formulation of new alliance contracts are scarce.

According to TCE and as outlined above, contract design is primarily dependent on the attributes of the transaction between partners. To provide a dynamic picture of inter-firm relationships, scholars insist that contracts and performance outcomes are influenced by past practices or prior ties and expectations for future transactions (Argyres 2011; Argyres and Liebeskind 1999; Batenburg et al. 2003; Gulati 1995; Gulati et al. 2009; Sampson 2004b). Practices pertaining to contract design and alliance governance are likely to be reshaped, each time they are used. Feedback in the form of subsequent alliance performance motivates partnering companies to continuously adjust their practices of contract-making over time, based on the accumulation of prior experiences (Kale and Zollo 2005).

There is a vivid debate on the question of whether experience gained from a prior relationship with the same partner will lead to more or less contractual detail (Gulati 1995; Mayer and Argyres 2004; Poppo and Zenger 2002; Ryall and Sampson 2009). Ariño and Reuer (2004) illustrate that a prior relationship could, on the one hand, facilitate the reliance on less contractual complexity due to reduced behavioral uncertainty, enabled by the creation of trust or inter-organizational routines that would substitute for the need of binding contractual arrangements (e.g., Dyer 1997; Gulati 1995); on the other hand, contractual complexity might be intensified, since contracting costs are significantly reduced, leading to the retention of some once negotiated clauses as boilerplate terms for subsequent contracts (e.g., Hagedoorn and Heslen 2007). A prior relationship bears the potential of learning effects as a result of the identification of potential problems that can be prevented in the future by more intense ex ante-alliance management (Batenburg et al. 2003) and more detailed contracts (Mayer and Argyres 2004; Ryall and Sampson 2009).

By considering partner-specific and general partnering experience, we go beyond the literature on the impact of different experience types on contract design and additionally consider *deliberate learning efforts* (Kale and Singh 2007) that exert an influence on the dynamic evolution of alliance contracts. Firms that are experienced in allying tend to establish learning processes (Reuer et al. 2002). More specifically, they synthesize, codify, and disseminate their knowledge on alliance management in order to improve alliance governance over time (Albers 2010; Kale and Zollo 2005). Figure 2 summarizes our ideas on the impact of experience and learning on contractual functions.

Insert Figure 2 about here

4.1 Partner-Specific Experience

Prior relationships with the same partner offer opportunities to learn how actions should be aligned and what contingencies should be considered, bearing potential for drafting more complete contracts subsequently (Mayer and Argyres 2004; Susarla et al. 2009) and facilitating post-formation governance adaptations (Reuer et al. 2002). According to evolutionary theory (Kale and Zollo 2005; Zollo et al. 2002), firms adapt and replicate their management practices over time based on their experience. Lessons learned from partner-specific experience result in localized, incremental adjustment processes that take place semi-automatically. Some studies discuss the effect of prior relationships on aggregate measures of contractual complexity. Thereby, while Poppo and Zenger (2002) find a positive link that indicates a complementary relation, other studies show that prior ties lead to less contractual detail (Corts and Singh 2004; Kalnins and Mayer 2004) or reject any impact on contractual complexity (Reuer and Ariño 2007; Sobrero and Roberts 2002). In awareness of distinct contractual functions, the evidence needs to be reinterpreted:

Referring to the effect of prior relationships on the use of *safeguarding* clauses in subsequent contracts with the same partner, the findings are not completely unidirectional. A negative influence on safeguarding due to the presence of trust cannot be confirmed (e.g. Reuer and Ariño 2007). The results point towards a stabilizing or a positive effect of prior relationships on safeguarding. For instance, Mayer (2004) confirms that the use of early termination clauses, representing an insurance against a unilateral exit from an agreement aspired by one party, increases with the number of previous joint projects. Although this result might suggest that the parties know from their joint experience how to better determine termination conditions, it is not statistically significant. Apart from this tendency towards a positive, learning-driven link between prior ties and safeguarding, we see preliminary evidence for a stabilizing inertia effect. Most contracts contain similar terms, particularly on confidentiality, termination, or dispute resolution, i.e., clauses that predominantly serve safeguarding purposes (Ryall and Sampson 2009). Parties that repeatedly make contracts tend to use safeguarding clauses as boilerplate terms (e.g., Hagedoorn and Hesen 2007). They are once negotiated and then included in subsequent contracts in order to avoid costly renegotiations, but the marginal increase in contractual complexity is declining. Put differently, partner-specific experience is likely to have a positive effect on the complexity of contractual safeguarding in new contracts, but at a decreasing rate. Since Reuer et al. (2002) show that partner-specific experience promotes changes in monitoring mechanisms that serve safeguarding purposes during alliance evolution, a positive effect of partner-specific experience on subsequent contract adaptations with regard to safeguarding can also be assumed.

As boilerplate effects can lead to inertia after a certain level of contractual detail and lower the contract-augmenting learning effects for these functions, boilerplate terms are not likely to be used for coordination. Coordination clauses are often subject to task-specific negotiations. So, the efficiencies of boilerplate terms cannot unfold. Referring to newly agreed contracts between the same partners, Mayer and Argyres (2004) show that, aiming at facilitating task completion, the contractual clarification of the parties' responsibilities and reporting structures develops incrementally and is more detailed at the end than at the outset of the relationship due to lessons learned. These findings are in line with Ryall and Sampson (2009) who reveal that learning effects foster more detailed contracts with reference to coordination. Although Argyres et al. (2007) and Reuer and Ariño (2007) cannot support this positive relationship, we see a general tendency, especially in awareness of Mayer and Argyres' (2004) findings, that prior ties between partners promote the increasing use of contractual clauses pertaining to coordination in subsequent alliances.

As outlined above, as boilerplate terms are particularly well applicable to subjects that are common to many contracts, they are mainly used for safeguarding purposes. They are also

applied for contingency adaptability clauses that are not specific to the underlying transaction and can easily be copied from past contracts (e.g. Argyres and Mayer 2007). Firms are likely to use more contingency adaptability clauses in subsequent contracts, since partners learn from their mutual experience how to identify challenges that foster transaction instability and cope with them more effectively (Argyres et al. 2007; Luo 2002). The degree of contingency adaptability increases owing to learning effects, until a certain level is reached. This level acts as a standard level for future transactions, which will only be augmented, if new hazards merit special attention (Mayer and Bercovitz 2008). Thus, partner-specific experience is likely to have a positive effect on the complexity of contractual contingency adaptability in subsequent alliances, but at a decreasing rate.

4.2 General Partnering Experience and Deliberate Learning Efforts

While the effect of partner-specific experience gained from a prior relationship with the same partner has been discussed to a certain extent, other sources of learning from the past for present contract design choices and dynamic changes in the contractual framework of an extant relationship are still underrepresented in research.

Firms tend to overlook the learning potential inherent in their general alliance experience. They are likely to learn from partner-specific experience but do not rely on lessons learned from relationships with other partners, when they make new contracts (Mayer and Argyres 2004). The experience gained from other relationships can have implications for contract design (e.g. Hoang and Rothaermel 2005; Sampson 2004b). For instance, the degree of contractual detail and penalty and monitoring provisions increases over time, as firms obtain overall experience in collaborating and contracting with partners (Ryall and Sampson 2009).

Emphasizing the role of firm-level general partnering experience for the dynamics of inter-firm relationships, Reuer et al. (2002) reveal that general partnering experience does not nurture subsequent governance changes or adaptations of extant contracts with given partners. Focusing on the formulation of new contracts, Lacity and Willcocks (1998) analyze the IT sourcing practices of 40 firms. They show that the performance of recent transactions is better than that of older ones, because firms get more skilled in writing new contracts with outsourcing providers over time. These findings imply that general partnering experience does not exert a direct influence on contract design choices but requires the implementation and use of learning processes in allying companies that enable adaptations over time.

While evidence on the impact of firms' general contracting experience on contract design is fairly scarce, some scholars have lately called for research on this experience type and the role of micro-level learning processes (e.g. Argyres et al. 2007; Reuer and Ariño 2007). Based on the knowledge based view (e.g. Grant 1996), Argyres and Mayer (2005) argue that firms can develop a firm-wide capability in contract design that rests upon purposeful and intentional learning how many and what details are to be included in a contract. Firms should systematically leverage their contract-related experience that results from prior relationships with multiple partners and resides in experts such as lawyers, managers and engineers. If a firm aims at producing such a firm-level capability, *deliberate learning efforts* will help to synthesize individual contracting experience in order to enhance the overall firm's future contract-making. Hence, we argue that, similarly to positive previous experiences with the same partner (Batenburg et al. 2003), collaborative experiences with any partners and any tasks may exert an influence on contract design by motivating investments in intentional learning to make effective alliance contracts and continuously improve them. This argumentation contradicts to traditional learning theory that implies that the choice of what roles an alliance contract has to fulfill and what clauses are to be included is a function of similar decisions that a company has made in prior situations, i.e., semi-automatic learning. If

firms form alliances in order to strengthen their competitive position, they will not only be interested in getting access to new resources and knowledge but also in improving and strengthening existing capabilities. This endeavor is likely to foster allying companies' purposeful learning to make better contracts (Kale and Zollo 2005).

Based on the debate on alliance capabilities (e.g. Kale et al. 2002; Schreiner et al. 2009), i.e., an organization's ability to manage alliances, several deliberate learning processes can be specified: first, *knowledge articulation* includes, e.g., the debriefing of negotiators, records on preliminary results during the contracting process, and contract databases; second, *knowledge codification* comprises e.g., contract templates, and checklists and guidelines on contracting issues; third, *knowledge sharing* involves, e.g., the participation in meetings to discuss contracting issues and the informal sharing of know-how on contract design; and finally, *knowledge internalization* comprises, e.g. the organization and employees' attendance of training programs on contracting issues (Kale and Singh 1999, 2007).

These deliberate learning efforts aim at collecting and synthesizing various experiences with collaborative arrangements such as alliances, joint ventures, or outsourcing relationships that tend to be dispersed in allying organizations. Their systematic assessment and use can enable firms to make more effective contracts and include more detailed and stringent provisions over time, since experience with many partners across a firm supplies a vast pool of lessons learned on how to better safeguard investments, clarify responsibilities and identify relevant contingencies. The reliance on cognitive learning processes (Zollo and Winter 2002) contrasts the unstructured learning that is typical for partner-specific experience (Mayer and Argyres 2004), because the reliance on the localized, tacit experience of partner-specific boundary spanners is not sufficient. Since firms can systematically benefit from their firm-wide experience that has been gained from prior relationships with various alliance partners (e.g., Susarla et al. 2009), it is likely that, the more experienced a company is in contract-making, the more *deliberate learning processes* will be used for alliance contract design.

The more experienced allying firms are, the higher is the likelihood that they develop stable patterns of activities for ex ante-alliance management (Kale and Zollo 2005), such as some kind of contract template that contains boilerplate terms in order to support alliance managers' contract design choices. Positive effects on the complexity of contractual clauses that serve all pre-specified functions are likely. Similarly to the impact of partner-specific experience, boilerplate effects can emerge for *safeguarding* and *contingency adaptability*. These clauses are not specific to a particular transaction but can be used in any alliance. Once established as an approved practice in the alliance governance and design stage, they will be included in any new contract with any partner. These effects may weaken the contract-improving learning effects at a certain level. Beyond that level, a further increase in deliberate learning efforts may become counter-productive with reference to aspects that are not specific to a particular transaction and even lead to inertia. More precisely, general partnering experience drives the complexity of safeguarding and contingency adaptability clauses but at a decreasing rate.

The *coordination* of inter-firm relationships may largely benefit from thorough learning efforts, because it is specific to a particular transaction between partners. Coordination frequently requires the synthesis of a variety of skills and capabilities that can reside in many different parts of the allying firms and the modularization of interfaces for the joint performance of the transaction that is agreed upon in the alliance contract (Susarla et al. 2010). The more experienced alliance partners are in monitoring joint projects across organizational boundaries, the higher is the likelihood that they steadily invest in deliberate learning efforts. The latter help them to improve their alliance management capabilities and their ways to collaborate across organizational boundaries over time (Kern and Willcocks 2000), including their skills in specifying ex ante the coordination of inter-organizational

exchanges in the form of appropriate contract clauses. As a consequence, the complexity of coordination clauses continuously increases in subsequent alliance contracts.

5 Discussion and Suggestions for Future Research on Alliance Contract Design

From a managerial perspective, research on contract-making in alliances is relevant, since it is an essential ingredient of the alliance management lifecycle (Kale and Singh 2009). In awareness of high alliance failure rates (e.g. Park and Ungson 2001), alliance performance would be improved, if practicing managers had a better understanding on how to make and use contracts as a component of overall alliance governance systems (Albers 2010) under conditions that vary with reference to transaction attributes, allying firms' various experiences with the same and other partners, and their investments in deliberate learning efforts. Contract design helps to monitor the costs of a transaction and affects alliance partners' pattern of social interactions from the outset of a relationship (Heiskanen et al. 2008; Kern and Willcocks 2000; Susarla et al. 2009). As Weber and Mayer (2011, p. 72) emphasize, "Contract design impacts the exchange and the relationship".

Our literature review draws on prior studies on the functions (e.g. de Jong and Klein Woolthuis 2008; Reuer and Ariño 2007) and dynamics of contracts (e.g. Lui and Ngo 2004; Reuer and Ariño 2002). Thereby, we consider alliances ranging from rather hierarchy-like forms, e.g., joint ventures (Luo 2002), to rather market-like forms (e.g. Mayer and Bercovitz 2008) that are governed by more detailed contracts than those being prevalent in traditional spot market exchanges. Our literature review reveals that the comparability of findings is sometimes limited, because the frequently used unidimensional conceptualization of contractual complexity tends to overlook that alliance contracts serve different purposes that are differentially affected by economic and relational antecedents, such as asset specificity, task interdependence, and transaction instability as well as allying firms' prior experiences and engagements in deliberate learning. More research disentangling the effects of these factors on safeguarding, coordination, and contingency adaptability functions that are separately measured is warranted.

A static perspective on alliance contracts implies that, while safeguarding aims at preventing opportunism-driven relational risks, coordination and contingency adaptability address performance risks stemming from the respective task or the transaction environment. Some scholars have recently started to combine research on the governance of inter-firm relationships with research on their experience-driven evolution over time, emphasizing a dynamic perspective on contract design. Such a dynamic perspective implies that experience gained from prior relationships with the same or other partners affects the amount of investments in ex ante-alliance management (Batenburg et al. 2003) and especially the content of alliance contracts (e.g. Mayer and Bercovitz 2008; Reuer et al. 2002). We consider both partner-specific and general partnering experience (Gulati et al. 2009), since different experience types affect contract design in differential ways. While partner-specific experience exerts a direct influence on the pre-specified contractual functions, general partnering experience nurtures allying firms' engagement in deliberate learning efforts that, in turn, affect the complexity of safeguarding, coordination, and contingency adaptability clauses over time.

Going beyond the transaction-specific attributes of an exchange relationship, we consider learning processes in terms of knowledge articulation, codification, sharing, and internalization that aim at helping firms to make better alliance contracts over time (e.g. Kale and Singh 2007). Put differently, a contract design capability which is - similar to the alliance capability concept (e.g. Schreiner et al. 2009) - the ability to make and agree upon alliance

contracts, is likely to evolve. If it is dynamic, it will improve the effectiveness of a firm's new and extant alliance contracts over time. For instance, based on the learning curve literature, cost savings in the form of reduced investments in money, time, and employees dedicated to repeated contract-making with the same or other alliance partners could be tangible benefits that may accrue from this capability and contribute to a firm's reduced rate of alliance failure over time (Zollo et al. 2002). Longitudinal studies on the evolution of allying firms' contract design capabilities, costs of contract-making, and alliance survival rates over a specific time period under conditions of varying amounts and types of prior ties and different investments in deliberate learning efforts would be beneficial in examining this issue.

We agree with Weber et al. (2009), de Jong and Klein Woolthuis (2009), and Argyres (2011) that complementing the prevailing economic perspective with less traditional theories, such as evolutionary theory (e.g. Kale and Singh 2002, 2007; Kale and Zollo 2005), can provide numerous opportunities for future alliance contract research. We address some gaps in the existing literature and suggest some ideas that may be promising for future studies. Similarly to, e.g., de Jong and Klein Woolthuis (2008, 2009) and Weber and Mayer (2011), we propose that contracts are multifunctional agreements that fulfill purposes that go beyond the salient safeguarding function. While de Jong and Klein Woolthuis (2008) plead for more longitudinal case studies in this area, we additionally see potential for quantitative approaches. We suggest that, since the existence of unique determinants of distinct contractual functions might be hidden in aggregate models of inter-firm contracts (Reuer and Ariño 2007), future research should measure to what extent a contract serves each function separately. Similarly to an overall contractual complexity measure (e.g. Barthélemy and Quélin 2006; Mellewigt et al. 2007; Parkhe 1993), this could be achieved by referring to the number and stringency of the contractual clauses that can be assigned to each function. Three different measures are likely to result, indicating the complexity of contractual clauses for safeguarding (e.g. Ariño et al. 2008), coordination, and contingency adaptability, respectively. Their repeated measurement could show how the complexity referring to each contractual function evolves over time.

By suggesting the consideration of deliberate learning efforts based on firm-wide experiences in contract design, we pave the way for large-scale, longitudinal studies on the question of how firms learn to contract over time. In this regard, Eckhard et al. (2009) provide a notable example based on panel data from the German automotive industry. It illustrates the benefits associated with the application of multi-method approaches in alliance contract research that rely, e.g., on survey data on transaction-related and learning variables that are combined with secondary data on alliance contracts and their dynamic evolution over time.

Overall, we hope that our review and assessment of prior evidence will inspire future empirical research on learning- and transaction-related drivers of overall contractual complexity and distinct contractual functions and the development of innovative research designs.

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Table 1: Prior Evidence on Contract Design in Inter-Firm Partnerships

Study	existence of contracts	contractual complexity	contractual functions			contractual dynamics			
			safeguarding	coordination	contingency planning	safeguarding	coordination	contingency planning	unspecific
Andersen (1999)	x								
Anderson and Dekker (2005)		x	x	x					
Argyres et al. (2007)				x	x		x*	x*	
Ariño and de la Torre (1998)	x								
Ariño et al. (2008)		x	x						
Aulakh and Genctürk (2008)	x								
Avadikyan et al. (2001)			x	x					
Barthélemy and Quélin (2006)		x							
Batenburg et al. (2003)		x							x*
Corts and Singh (2004)									x*
Hagedoorn and Hesen (2007)			x						
Heiskanen et al. (2008)	x								
Helm and Kloyer (2004)		x							
Kalnins and Mayer (2004)									x*
Kern and Willcocks (2000)			x	x					
Lacity and Willcocks (1998)									x**
Lui and Ngo (2004)		x							
Luo (2002)		x			x				x*
Malhotra and Murnighan (2002)	x								
Mayer and Argyres (2004)							x*, **		
Okamuro (2007)	x								
Parkhe (1993)		x							
Poppo and Zenger (2002)		x							x*
Ramachandran and Gopal (2010)	x								
Reuer and Ariño (2002)		x							
Reuer and Ariño (2007)		x	x	x		x*	x*		
Reuer and Tong (2005)	x								
Reuer et al. (2002)									x**
Ryall and Sampson (2009)		x	x	x		x*, **	x*, **		

Table 1 (continued)

Study	existence of contracts	contractual complexity	contractual functions			contractual dynamics			
			safeguarding	coordination	contingency planning	safeguarding	coordination	contingency planning	unspecific
Samaddar and Kadiyala (2006)		x							
Saussier (2000)		x							
Sobrero and Roberts (2002)		x							x*
Srinivasan and Brush (2006)			x						
Stephens et al. (2009)	x								
Susarla et al. (2009)			x						
Susarla et al. (2010)			x	x					
Willcocks et al. (1999)	x								
Wright and Locket (2003)	x								
Total:	11	15		12				12	

(* partner-specific experience; ** general partnering experience)

Fig. 1: Classification of Contractual Functions

Transaction Attributes	Asset Specificity	Task Interdependence	Transaction Instability
Major Concerns	↓ Appropriation Concerns	↓ Coordination Concerns	↓ Adaptation Concerns
Contractual Function	↓ Safeguarding	↓ Coordination	↓ Contingency Adaptability
Partner Perspective	Adverse	Collaborative	Adverse / Collaborative
Typical Contractual Clauses	<ul style="list-style-type: none"> ▪ Property rights ▪ Confidentiality ▪ Unilateral Early Termination ▪ Dispute Resolution 	<ul style="list-style-type: none"> ▪ Roles and Responsibilities ▪ Reporting ▪ Project Schedule ▪ Designation of Specific Personnel 	<ul style="list-style-type: none"> ▪ Price Adjustment ▪ Engineering Changes ▪ Force Majeure

Fig. 2: The Drivers of Contractual Dynamics

Experience	Specific	General
Origin	Prior relationships with the same partner	All prior relationships with any partner
Deliberate Learning Efforts	↓	↓ Knowledge Articulation Knowledge Codification Knowledge Sharing Knowledge Internalization ↓
Contractual Function	Safeguarding Coordination Contingency Adaptability	Safeguarding Coordination Contingency Adaptability

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