





Contract research and high-tech alliances: Vistas for future studies

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Abstract

This research note addresses the governance structure of innovation processes in high-tech alliances, focusing on the content and role of formal contracts. Contract research is strongly heterogeneous, that is, many different paradigms, concepts, definitions and measures exist. We discuss the most important aspects of contract research and primarily argue that future research needs to pay ample attention to the interpretation of contracts, as the written contract might be just a standard form written by lawyers who are not directly involved in the high-tech alliance. We also propose a wide view of contracts and emphasize that contracts might have different functions depending on the role that the contract plays in the relationship. In so doing, we review the most common research methods, i.e., surveys, meta-studies and longitudinal case studies, and suggest that the latter offer the most promissory opportunities for future alliance contract studies.

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1. Introduction

This research note addresses the governance of high-tech alliances. The governance of high-tech alliances, through legal, private and relational ordering, is a challenge as it needs to balance between realizing benefits and safeguarding risks (Nooteboom, 2004). Our focus is on the role of legal ordering, or formal contracts, in this process. Formal contracts are important instruments because they represent promises or obligations to perform particular actions in the future (Mayer & Argyres, 2004). However,

empirical research on interfirm contracts in general and

high-tech alliances in particular is sparse because, among other things, alliance contracts are often subject to

As a first point of departure, we need to determine the type of alliance under investigation. Contract studies often focus on vertical relationships such as procurement relationships where prices, quantities and qualities can be established and agreed upon (Crocker & Reynolds, 1993). There have been few studies of contracts in high-tech cooperative relationships, where parties have no hierarchical relationship and outcomes cannot be predetermined (a notable

confidentiality and therefore rarely published. This hampers the understanding of the content and role of alliance contracts. In this research note we will review key theoretical concepts as well as next steps for alliance contract research. As an introduction to this research note, we will specify three points of departure.

As a first point of departure, we need to determine the

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exception is Ryall & Sampson, 2003). Many firms are involved in high-tech alliances and their importance for firm performance is growing (Hagedoorn & Hesen, 2007). The cooperative nature of high-tech alliances presents an interesting arena for the study of contracts. These alliances focus on the development of new knowledge (intangible assets); prices and budgets might be difficult to set *ex ante* and the verifiability of tasks and performance are likely to be low (e.g., man hours are specified but the result is still unknown). These differences in key relationship characteristics and context, as compared with other contract studies, are important and can encourage new insights into the study of contracts and interfirm relationships.

As a second point of departure, we need to pay attention to the actors actually negotiating and executing the contract in the high-tech alliance. This determines the behavioural assumptions. Alliance managers may behave opportunistically and for that reason contracts are important instruments to mitigate contemporaneous and future risks—particularly when there are high levels of dedicated assets, which is often the case for high-tech alliances (Das & Teng, 2003). However, much contract research—especially that in the tradition of transaction cost economics (Williamson, 1985)—has in a sense become cut off from the human aspects of economic transaction, i.e., the potential development of trust, friendship or loyalty. In other words, many contract studies seem to neglect relational characteristics alongside transaction characteristics in determining the role of contracts. It is as if contracts are only seen as a means to limit risks and not as an instrument to actually govern a relationship in the absence of a formal hierarchy. More in particular, despite critical views there are solid theoretical arguments as well as abundant empirical evidence that show that trust matters in the governance of high-tech alliances (de Jong & Klein Woolthuis, 2008; Nooteboom, 2002). Economic exchange also incorporates social elements that are built on personal foundations in which reciprocity and affection as well as self-interest play a role (Lane & Bachman, 1998). Recent empirical studies confirm this by showing that about half of the people are completely selfish. whereas the other half exhibit egalitarian or even altruistic preferences (Chen, 2000). In other words, the assumption that actors have an intrinsic tendency to keep promises is as true as their likelihood to behave opportunistically. This brings the conclusion that fear of opportunistic behaviour by a potential or actual partner and a willingness to trust and reciprocate may be mutually considered by those designing and implementing contracts to manage interfirm alliances.

As a third point of departure, we need to consider the intentions of the alliance partners. A one-dimensional assessment of contracts, accompanied by proxies, such as the length of a contract (e.g., Joskow, 1990), is insufficient to fully capture the content and role of formal contracts in a high-tech alliance. Alliance partners have particular intentions behind the design of their formal contracts. These intentions are amplified by parties through the clauses they propose to include. In turn, their counterparts interpret and react to these proposals. If, for instance, one contracting party focuses on clauses intended to safeguard against opportunism, the other party may interpret this as a lack of trust. A variety of reactions may result, such as an effort to demonstrate competence, reliability and trustworthiness,

'proving' that the other is wrong, increasing emphasis on safeguarding one's own interests, or initiating conflicts. This pleads for a more dynamic perspective and a more detailed and finely nuanced analysis of formal contracts in studies of high-tech alliances. Hence, the design, implementation and management of a formal contract is neither static nor one-dimensional. It is a dynamic process between parties that reveals unilateral and mutual intentions and beliefs, creating understanding and preventing misunderstandings.

2. Contracts and alliance performance

The ongoing debates in the contract literature are dominated by the concept of contract completeness and the relationship between that and performance (Furlotti, 2007). A complete formal contract is legally binding as its clauses cover all aspects of the relationship (contract extensiveness or contract complexity) and these clauses are formulated specifically enough to enable verification and enforcement (Deaking & Wilkinson, 1998). Contracts tend to vary in the degree of extensiveness and specificity and have to mediate between the two. More general clauses can cover more (future) contingencies, increasing the contract's extensiveness, but are usually less specific about the execution of the clauses. In addition, the ambiguity of general clauses reduces verifiability by the actors and the court of law. Hence, contract completeness is not a static phenomenon. In different situations, different contracts might be more or less complete. For example, a contract will need more clauses for the management of a complex relationship than for a simple, single transaction. Both contract forms can be equally (in)complete. Thus, the completeness depends on the characteristics and context of the transaction or alliance.

Contract completeness is a challenging concept to apply in empirical, survey-based research. Data that derive from questionnaire-based interviews cannot determine with certainty that a contract is complete. For this we would have to know all aspects of the relationships, all transaction characteristics and all future contingencies. We would also have to determine whether the clauses are specific enough to verify and enforce. Such in-depth knowledge of the transaction and the relationship, the context and the exact wording of the contract is very hard to accommodate in any empirical study, let alone in a large-scale survey. For that reason, empirical studies silently seemed to have moved away from contract completeness to other, related concepts. Early research included measures such as the length of the contract (Joskow, 1990). More recent studies focus on contract details measured by the number of clauses in a contract or by counting this number and dividing it by a maximum number of 'theoretically' possible clauses (Reuer & Ariño, 2007).

However, the question remains whether such measures really account for the role of contracts in high-tech alliances. There are many implicit assumptions on what alliance contracts are, that is, what they mean to parties and to an interfirm exchange. The way parties interpret their contract is not often measured; subjective measures of the role and meaning of contracts are rarely included in empirical research (a notable exception is Poppo & Zenger, 2002). Below, we first explain why contract studies in the alliance literature should focus on the interpretation of

contracts. Then we address the interpretation of contracts in terms of contract functions and clauses.

An important consideration is the relationship between contract completeness and performance—more in particular, whether contracts should be complete or incomplete in the first place. Some scholars argue—in contrast to transaction cost economics and contract theory-that incomplete rather than complete contracts lead to better performance. Fehr and Schmidt (2002), for example, argue that contracts should remain incomplete (with, for instance, less specific links between performance and rewards or punishments) because an incomplete contract is closer to the implicit and explicit norms and values of human interaction, represented by their behavioural preferences. Its very incompleteness may lead to superior performance as any clash with relational norms may backfire on the relationship and reduce the parties' cooperativeness. Transaction cost economics and contract theory, on the other hand, plead that under conditions of uncertainty and risks one should safeguard to the maximum to achieve efficient outcomes.

Little is known, however, as to whether contracts—complete or not—truly contribute to achieve superior outcomes, not only because the (in)completeness of contracts is difficult to measure but also because performance measures are often lacking. This raises the question whether alliance contract research should focus on the letter (e.g., the paperwork) or the intention (e.g., the interpretation) of the contract. As Lyons (1996, p. 31) states, 'The written word has apparent objectivity, and would be the prime source of evidence in the event of litigation. However, numerous contracts are written ... but ... might never be invoked even in the event of a dispute.' Moreover, the legal enforceability of contracts may be limited due to contradictory terms in the contract and uncertainties of the legal system and limited specificity of the contractual clauses. We therefore proceed in line with Lyon's work and focus on the interpretation of contracts rather than on the contract's completeness, that is, 'the paperwork'.

The arguments are as follows. It is not the actual contract that influences alliance performance but the interpretation of the contract, because the interpretation of the contract will determine the behaviour of the parties and thereby the success of their relationship. In alliances where parties trust each other, they are more likely to reach a 'fair' deal with a fair contract, experience little trouble in establishing and formalizing the contract, and use the contract less often because they have alternative governance mechanisms at their disposal (relational governance). As a result, the (ex ante) costs of establishing and formalizing the contract will be lower, as well as the (ex post) costs of haggling and renegotiation. Moreover, cooperative behaviour will lead to a more constructive atmosphere. This all leads to higher alliance performance. In alliances where parties lack trust, the opposite will be the case: contracts will be interpreted merely as a safeguard against opportunism and—as the partners cannot fall back upon relational governance mechanisms such as loyalty and trust—they will have to use the contract to manage the relationship. The higher ex ante and ex post contracting costs, together with the noncooperative nature of the relationships, will decrease alliance performance.

3. Contract functions and clauses

The multifunctionality of contracts has been acknowledged for a long time (Llewellyn, 1931) but receives increasing attention. Three research methods are commonly applied to understand the multifunctionality of contracts: survey research, longitudinal case studies and meta-study analysis. An important trend are studies that report survey-based findings of respondents that indicate whether or not particular clauses from a pre-defined list are included in their alliance contracts. Parkhe (1993) offers a landmark study in this respect. He applies eight provisions to establish contractual safeguards that range from 'prompt written notice of any departure from the agreement' to termination clauses and lawsuit provisions. From this and other studies we know that alliance contracts typically outline the roles and responsibilities of each party, the allocation of decision and control rights, the planning for various contingencies, how the parties will communicate, and how to resolve disputes. Furthermore, with the help of factor analysis studies like these identify groups of contract terms that, in turn, are interpreted and labelled by the researchers. These labels are equated with the role of a contract in the alliance. Additionally, various transaction characteristics such as the level of dedicated assets or environmental uncertainty are regressed on an overall measure of contracts (e.g., the number of clauses that are specified in the contract) or the contract dimensions that are determined by means of the factor analysis (Anderson & Dekker, 2005). These regression studies offer the opportunity to explain why some alliance partners include more clauses than others, as well as a particular role of a contract.

Longitudinal case studies offer another research method to disentangle the content and role of alliance contracts. Klein Woolthuis, Hillebrand, and Nooteboom (2005), for example, analyse the relationship between trust and contracts in Dutch high-tech alliances. Similarity in research settings-nations and industries-is important because, as said, this co-determines the content and role of contracts. Unlike, for instance, in the United States, contracts are in the Dutch practice often not used and interpreted in a strictly legal fashion with opportunism as a central point. (This safeguarding function of formal contracts is primarily based on exercising power or 'deterrence', that is, monitoring or hierarchical supervision, contract enforcement and threat of 'exit'.) Alliance contract research reports mixed empirical results on the relationship between trust and contracts. Some studies indicate that legal regulation is an important precondition for trust (e.g., Zucker, 1986), whereas others find that trust precedes contracts (e.g., Larson, 1992). Klein Woolthuis et al. (2005) show that trust in general will precede contracts, and that trust and contracts can be both substitutes and complements. But it is not primarily a fear of opportunism that makes partners turn to legal governance instruments. The study uncovered three core functions of contracts in the setting of Dutch high-tech alliances. Of course, mostly contracts will contain a mixture of clauses and serve a number of functions. The analysis should not be understood as an 'either-or' discussion, with contracts having, for example, either a symbolic or a safeguarding function. Contracts will be mixed, but at the same time be directed

towards one or the other function, which will be reflected in the clauses included.

The first core function is that of coordination. In a trusting atmosphere, where parties do not fear opportunism, a contract may be used to specify what goals parties aim for and how they want to achieve these goals. This contract may be very detailed but will generally focus more on the positive (what we want to achieve and how) than on the negative (which legally enforceable measure we put in place to safeguard property or knowledge and how we take the case to court). Such a contract can be interpreted as a technical aid to managing the relationship, in the same way as minutes of a meeting remind participants of arrangements that were made. The second core function is that of safeguarding for contingencies. When parties engage in a long-term and complex relationship, parties may put a detailed contract into place to have a framework for how to (re)act if unforeseeable contingencies occur. These contingencies do not refer to unforeseen opportunism, but to outside contingencies such as technical or economic developments, a hostile take-over of one of the partners. bankruptcy of a partner, or accidents. The third core function is that of showing commitment. Partners may also use the contract as a tangible expression of their trust in each other and their intention to be loyal partners with high levels of dedicated investments and long-term commitments. In these cases the contract can partly be interpreted as a symbol, or a signal for showing commitment. Thus, parties in a high-tech alliance might see their pre-agreements much as a pre-nuptial agreement, and their final contract as a marriage contract, confirming the trust that has been built up in their relationship.

The aforementioned functions parallel the meta-study of Furlotti (2007). On the basis of an extensive review of empirical studies he argues that contracts are organizational phenomena that can incorporate almost any coordination mechanism, not only hierarchy, but norms and rules, and joint decision-making procedures as well. Furlotti proposes that interfirm contracts consist of a transactional part and of procedural elements. Within the first term he designates those clauses where the parties commit to undertake specific performance in exchange for reciprocal undertakings of the counterparty. Commitments on tasks, resources, outputs and remuneration provisions are the main items in the transactional part. With the second, Furlotti designates rights and processes that are intended to serve purposes of dynamic adaptation, integration and preservation of a shared understanding. Among the procedural elements, he identifies processes of decision-making; rules, or restraints, that infuse predictability in the relationship; rights that underpin the enforcement of promises through the manipulation of payoffs; monitoring, that is instrumental to both enforcement and decision-making. The first is related to the coordination and commitment function, while the last corresponds to the safeguards for contingencies function of Klein Woolthuis et al. (2005).

4. The way forward

Business relationships in high-tech industries may offer substantial future benefits. Turnover and net profits can grow for many years in succession if companies join forces and manage to introduce new products in global consumer markets. However, many of these high-tech alliances fail, because of, among other things, ambiguity on agreements. That is, disappointing high-tech alliance performance is often not only due to the lack of crystal clear agreements on e.g. goals, investments and communication, but also because these agreements are not specified in a formal contract.

Contracts are important not only when things go wrong, but also in the development and management of the relationship. It is one of the most essential parts of the relationship, with different stages and, similar like trust, one that can make or break the interfirm alliance. The process of collaboration plays a central role in the design and implementation of a formal contract. It is not the mere presence or the absence of contracts, or their eventual detail that are the only issues. Instead, the focus should be on the aim and content of the contract and the atmosphere in which it is set out. If we consider the development of a high-tech alliance as a process in which positive and negative behaviour can change the relationship atmosphere -as already suggested in the literature by Zand (1972)—the writing and signing of a contract should also be envisaged as a step in this development. Contracts can, just like trust, be seen as both a cause and result of cooperation. Negotiating the contract can be seen as a process of getting to know and understand each other. Signing the contract can be seen as an act of commitment. This also explains why lawyers are not the most appropriate parties for alliance contracts because they have a biased focus—i.e., only safeguarding positions—and often perceive alliance contracts as one-shot documents designed at the start of the relationship.

For alliances in general and high-tech collaboration in particular, we primarily suggest that the interpretation of contracts might have a strong impact on the relationship's performance. For instance, in relationships where contracts are interpreted as the fair representation of a trustworthy mutual agreement, means of social governance might be present as an alternative to active referral to a contract's more forceful side. Contracts used in such a cooperative manner are likely to enhance performance. Future research needs to pay ample attention to the interpretation of contracts, as the written contract might be 'just a standard form', a document 'filed in the bottom drawer', or something 'written by lawyers who don't understand the way business is actually done' (Lyons, 1996, p. 31). We also propose a wide view of contracts. While acknowledging the importance of contracts in safeguarding risks and spill-over as put forward by transaction cost economics (Williamson, 1985), we emphasize that a contract can be an active and living instrument to achieve good results: they play a role in the ongoing process of relationship development. Thereby we suggest to carry on a line of research that emphasizes that contracts might have different functions depending on the role that the contract plays in the relationship.

This brings the question which research method would be appropriate in future studies of high-tech alliance contracts. Without doubt, survey research offers valuable insights concerning the content and role of formal contracts in alliances. Given the sensitive nature of the subject, it is

quite an achievement to collect data on alliance contracts. The data enable the application of statistical methods that help to disentangle the underlying causal structure of contracts, their antecedents and alliance performance. But there are limitations as well. First, to the best of our knowledge, the samples very rarely include high-tech alliances. The samples usually involve US-based buyer-supplier relationships or joint projects between very large, and hence unique, multinationals. Second, it is usually the researchers and not the respondents who offer the interpretations of the role of the contract. This runs the risk that researchers go beyond the scope of their data. Third, survey research somehow needs to pre-define a list of contract clauses. It is an open question how to determine this list of contract clauses. A deductive approach offers opportunities; that is, the available contract theories offer indications as to which clauses (such as safeguarding positions or protection of future knowledge) should be incorporated in the alliance contract. The deductive approach, however, will not result in a complete list of alliance contract clauses, nor does it specify the exact text of the proposed clauses in general, let alone for high-tech alliances in particular. This may bring ambiguity between the clauses that derive from contract theory and the day-to-day business practice of high-tech alliance contracts. Vice versa, an inductive approach runs the risk of sample bias: the contract clauses (and contract text) may apply to the companies that help the researcher to determine the list of contract clauses but not to other companies in the overall population of hightech alliances. The use of the available lists of contract clauses, such as that of Parkhe (1993) or Anderson and Dekker (2005), is also limited because of the contextspecific nature of alliance contract research. Furthermore, because of space limitations, survey research usually presents short statements of contract clauses. It is disputable whether all respondents actually understand these clauses or really verify their alliance contract while they answer the survey. Finally, by definition surveys offer a snapshot of alliance reality, that is, cross-sectional databases prohibit the analysis of the dynamic nature of contracting behaviour.

Some of these limitations are generic and apply to any type of research. In line with this, the validity of metastudies depends on the robustness of the empirical evidence that derives from survey-based research. The scope for a great number of meta-studies in the future seems to be limited given that they depend on the availability of firstorder datasets. Therefore, in the setting of high-tech alliances we suggest that process research offers, at least to some extent, solutions for the aforementioned challenges (cf. Elg, 2007; Mainela & Puhakka, 2007). Process research can be defined as the dynamic study of behaviour in organizations, focusing on organizational context, sequence of incidents, activities and actions which unfold over time (Ferlie & McNulty, 1997). Thus, notwithstanding the wellknown limitations of longitudinal case studies (such as a lack of generalizability of the findings and the time consuming nature of this approach), this research method allows scholars to study the content of a contract in great detail, to interview all relevant participants of the high-tech alliance at both sides of the partnership, the role of the contract in the relationship, to have an in-depth understanding of the overall contract context (including relational perspectives such as trust, opportunistic behaviour, past experience with the partner, alliance conflicts and resolutions), as well as to determine whether all aforementioned elements change over time. Based on the longitudinal case studies, scholars can then design a survey that accommodates the particular context of the high-tech alliances. Put differently, it is not very useful to design a survey intended to study German high-tech alliances that incorporates contract clauses that derive from a business survey concerning buyer–supplier relationships in the US automobile industry.

Taking this into account, we envisage the following opportunities for future research into alliance contracts on the basis of longitudinal case studies. First, we plead for research that looks at how the study of interorganizational governance (contract, control, trust) changes if the different assumptions of human behaviour are taken as point of departure. For instance, to what extent does it matter that alliance managers are predominantly altruistic or selfish? Does this behaviour change over time, e.g., is selfishness a response to misused altruism in an earlier stage of the hightech alliance or is it a stable personality trait? Second, future research may also account for demographic characteristics such as firm tenure and age as well as contract management skills of the alliance manager or characteristics of the top management team (Finkelstein & Hambrick, 1996). These may also determine the role and content of contracts in (high-tech) alliances. Finally, we need to understand the exact role of in-house or outside lawyers because they often co-determine the content of an alliance contract. Often high-tech alliance managers are restricted by their lawyers in the sense that key decisions must be legally verified before they can be incorporated.

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