The Resilience of Inherited Alliances: Navigating the Challenges of Alliance Partner Acquisition

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Abstract

Whereas prior research has acknowledged that, in dyadic alliances, one partner can acquire the other, it ignored the possibility of one partner being acquired by another company that was not involved in the alliance. We define alliances, which experience the acquisition of one partner by a third company, as inherited alliances. We posit that inherited alliances bring along unique information asymmetry and coordination challenges for the acquiring firm, jeopardizing the stability of inherited alliances. At the same time, we expect that acquired alliance partners can help acquiring firms to navigate these challenges, increasing the resilience of inherited alliances. Using a sample of inherited alliances from the biotech sector, we find that pre-acquisition duration of the inherited alliance and the presence of a post-acquisition preservation strategy increase the resilience of inherited alliances. Jointly, our findings contribute to the post formation alliance literature, exploring a compositional alliance change that has been largely ignored. In addition, our findings have implications for the acquisition literature, indicating that the choice for a particular integration strategy has implications that go beyond the interface between the acquired and acquiring firm.
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ABSTRACT

Whereas prior research has acknowledged that, in dyadic alliances, one partner can acquire the other, it ignored the possibility of one partner being acquired by another company that was not involved in the alliance. We define alliances, which experience the acquisition of one partner by a third company, as inherited alliances. We posit that inherited alliances bring along unique information asymmetry and coordination challenges for the acquiring firm, jeopardizing the stability of inherited alliances. At the same time, we expect that acquired alliance partners can help acquiring firms to navigate these challenges, increasing the resilience of inherited alliances. Using a sample of inherited alliances from the biotech sector, we find that pre-acquisition duration of the inherited alliance and the presence of a post-acquisition preservation strategy increase the resilience of inherited alliances. Jointly, our findings contribute to the post-formation alliance literature, exploring a compositional alliance change that has been largely ignored. In addition, our findings have implications for the acquisition literature, indicating that the choice for a particular integration strategy has implications that go beyond the interface between the acquired and acquiring firm.

Keywords: inherited alliances, alliance resilience, acquisitions
INTRODUCTION

Firms form strategic alliances, which we define as “independently initiated exchange, sharing, or co-development agreements” (Gulati, 1995, p.86), in order to complement their internal resource needs. As post-formation alliance literature highlights, alliances are not static entities. Instead, they are dynamic phenomena, undergoing changes throughout their lifecycle. Next to shifts in equity distribution between alliance partners (Chung & Beamish, 2010; Iriyama & Madhavan, 2014), changes in board composition, and contractual changes (e.g. Argyres, Bercovitz, & Mayer, 2007; Ariño & Reuer, 2004; Reuer, Zollo, & Singh, 2002), scholars identified changes in post-formation partnership configuration as core sources of alliance instability. In particular, they considered the exit, replacement and entry of partners in alliances as important configurational partner changes (e.g. Bakker, 2016; Lavie & Singh, 2011).

In this paper, we point to another mode of configurational partner change, which has been largely ignored: the acquisition of an alliance partner by a third company. Whereas prior research has acknowledged the possibility that firms can be acquired by one of their alliance partners (Dyer, Kale, & Singh, 2004; Zaheer, Hernandez, & Banerjee, 2010), it has not considered the possibility of one alliance partner being acquired by another company. This is surprising since this latter phenomenon, which we define as inherited alliances, is not a rare event. For example, in the biopharma industry, an acquisition of one of the partners by a third company occurs in 10% of all alliances (see Asgari, Singh, & Mitchell, 2017; Oleksiak, Faems, & de Faria, 2017). This particular type of post-formation change is theoretically different from other configurational partner changes. This theoretical uniqueness comes from the fact that an acquisition of an alliance partner by a third firm implies that the acquiring firm formally replaces the acquired firm as the partner in the alliance, but the resources of the acquired alliance partner remain
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present within the alliance. In other words, even though a new firm (the acquirer) becomes the legally responsible party in the alliance, the acquired alliance partner still plays a role in the alliance and it can play a role in attenuating the level of disruption that coincides with the acquisition of one of the alliance partners.

The core objective of this study is to explore the resilience of inherited alliances. We define alliance resilience as the ability to continuously achieve desirable outcomes amidst adversity, strain and significant barriers to adaptation or development (Sutcliffe & Vogus, 2003, p.34). Relying on insights from information economics and post-formation alliance literature, we identify two core challenges that jeopardize the resilience of inherited alliances: high information asymmetry between the acquiring firm and the *inherited alliance partner*, i.e. the alliance partner of the acquired firm that the acquiring firm inherits in the acquisition, and coordination disruptions. We focus on the role of the acquired firm as navigator in addressing these challenges. In particular, we expect that the acquired alliance partner can mitigate the challenges associated with information asymmetry and coordination disruptions by acting as a knowledge broker and a relational mediator. We identify particular conditions – i.e. technological relatedness between the acquired firm and inherited alliance partner and history of joint collaboration between the acquired firm and inherited alliance partner – that shape the ability of the acquired firm to execute this navigating role. Based on this reasoning, we develop hypotheses on how these conditions influence the resilience of inherited alliances. Finally, relying on insights from acquisition literature (e.g. Puranam, Singh & Zollo, 2006; Puranam, Sigh, & Chaudhuri, 2009), we also consider the post-acquisition integration strategy and its impact on alliance resilience.
We test our hypotheses with a dataset of 213 inherited alliances from biotechnology sector. We find that inherited alliances are more resilient if the acquired firm and the inherited alliance partner have a history of joint collaboration, and if the acquired alliance partner was preserved by the acquirer after the acquisition.

This paper advances research on post-formation alliance dynamics, highlighting a particular mode of post-formation change - i.e. acquisition of alliance partner by third company – that has received limited attention in extant literature. Whereas such inherited alliances face particular challenges, we highlight that the acquired firm, acting as knowledge broker and relational mediator roles, can help to increase the resilience of inherited alliances. This is particularly evident in the positive effect of history of joint collaboration between the acquired firm and the inherited alliance partner on inherited alliance resilience. This latter finding also contributes to the broader discussion on the role of partner-specific experience on alliance outcomes (e.g. Gulati, Wohlgezogen, & Zhelyazkov, 2012; Hoang & Rothaermel, 2005). Specifically, we add a new dimension to the partner-specific experience construct and highlight the importance of partner-specific experience gained within a particular alliance. We show that the partner-specific experience within rather than across alliances attenuates the disruptive effects of alliance partner acquisition by a third firm. Finally, our findings have implications for the acquisition literature (e.g. Datta, 1991; Puranam et al., 2006; Zollo & Singh, 2004), indicating that the choice for a particular integration strategy has implications that go beyond the interface between the acquired and acquiring firm.
THEORETICAL BACKGROUND

In this section, we first discuss why an acquisition of one of the partners is likely to threaten the stability of an alliance. We point to both information asymmetry and coordination problems as important challenges in this respect. Subsequently, we highlight the roles of the acquired firm in navigating these challenges. We then hypothesize under which conditions the acquired firm is more able to execute such navigating roles. Finally, we point to the integration strategy as an important condition that influences inherited alliances’ resilience to such acquisition event.

Alliance Partner Acquired by a Third Firm: Core Challenges

We expect that, in the context of inherited alliances, the acquiring firm faces two important challenges. First, the acquiring firm is likely to experience information asymmetries, meaning that the inherited alliance partner has more information about the inherited alliance than the acquiring firm. Second, the acquiring firm is likely to face coordination problems, implying that the acquiring firm can run into disagreements with the inherited alliance partner regarding how to manage the inherited alliance after the partner acquisition.

Challenge of information asymmetry. Firms scout for and aim to select partners that have and are willing to contribute with the necessary resources and capabilities to achieve particular goals in a joint alliance (Bierly III & Gallagher, 2007; Das & Teng, 2000; Eisenhardt & Schoonhoven, 1996). In the process of alliance formation, partners define the objectives and general conditions, which provide a roadmap for the joint collaboration over time (Reuer & Ariño, 2007). Whilst firms strive to form alliances with the best partners, the initial alliance composition may change over its life cycle (see Bakker, 2016; Chung & Beamish, 2010; Greve, Baum, Mitsuhashi, & Rowley, 2010). When such changes take place, the new to the alliance firm
is put in an informational disadvantage and this threatens the overall success of the alliance (Dyer et al., 2004).

An acquisition of an alliance partner implies that the acquiring firm is entering an ongoing alliance. This implies that the acquiring firm was not involved in the initial process of alliance negotiation and formation. In comparison with the inherited alliance partner, the acquiring firm is therefore likely to have less specific information on the goals of the alliances and the extent to which and how these goals are being realized\(^1\). In addition, the acquiring firm has rather limited knowledge of the inherited alliance partner’s resources, capabilities, and management approach. This information asymmetry between acquiring firm and inherited alliance partner can have important consequences for the alliance. Information economists argue that, when one actor experiences high information asymmetry, this actor may be hesitant to make investments (Agarwal, Taffler, Bellotti, & Nash, 2015; Mishra, Heide, & Cort, 1998; Myers & Majluf, 1984). Translating these insights into the context of inherited alliances, the inherited alliance partner has more knowledge about the alliance than the acquiring firm has. This implies that the acquiring firm is in a position of information disadvantage. This information asymmetry is likely to reduce the willingness of the acquiring firm to invest in the inherited alliance, which can threaten the stability and continuity of the inherited alliance.

**Coordination challenges.** Configurational changes in alliances such as partner exit, replacement and addition often represent a major shake-up, threatening the overall stability of an alliance (Bakker, 2016; Das & Teng, 2000; Greve et al., 2010). With respect to these

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\(^1\) The acquiring firm also cannot obtain complete information about the alliance in the due diligence prior to the deal (Reuer, Shenkar, & Ragozzino, 2004) since it would not be in the interest of the acquisition target and its alliance partner to reveal sensitive information, for the case of an uncompleted transaction. Consequently, when a firm decides to acquire another firm that is involved in alliances, it will not have complete information about the alliances of the acquired firm.
compositional alliance changes, post-formation alliance literature has identified a core coordination challenge, which is the disruption of alliance routines.

It is likely that configurational changes disrupt the collaborative routines and patterns of interaction within an alliance. When firms cooperate towards achieving a common goal, they develop specific cooperative mechanisms and refine them further to serve the alliance tasks as effectively and efficiently as possible (Greve et al., 2010; Zollo et al., 2002). In the event of a configurational partner change in an alliance, it is likely that the established routines are disrupted (Chung & Beamish, 2010). In addition, the available set of skills, capabilities or tangible assets changes (Das & Teng, 2000), implying that the alliance needs to further revise its routines to work within the new status quo. Consequently, the alliance partner reconfiguration may divert the partners’ attention from ongoing alliance operations towards reorganizational efforts (Chung & Beamish, 2010). For instance, when a new partner enters an alliance, those that were already involved in the alliance have to adapt to the new situation by assigning the new partner adequate roles so that their alliance can continue to function (Bakker, 2016). This reorganization process requires substantial managerial attention and entails the risk of disagreements and misunderstandings, which may further challenge the stability and continuity of such an alliance (Chung & Beamish, 2010; Reuer & Ariño, 2002).

We expect that, in the context of inherited alliances, similar coordination challenges are likely to emerge. An acquisition of one of the alliance partners by a firm external to the alliance implies that at least some of the alliance structures and routines are likely to be disrupted (Amburgey, Kelly, & Barnett, 1993; Bakker, 2016; Chung & Beamish, 2010). In the effort of establishing new collaboration mechanisms, the acquiring firm and the inherited alliance partner may face conflicting views on who should be responsible for what and how the alliance should
be managed. As such, the attention will be directed first towards resolving the disputes regarding
the *whats* and *hows* rather than towards the execution of the alliance agreement, putting the
realization of alliance goals in jeopardy.

In sum, we expect that, information asymmetry and coordination problems are likely to
emerge when one of the alliance partners is acquired by a third firm, jeopardizing the stability of
the inherited alliance. Below, we point to the acquired firm as a potential navigator that can help
to mitigate these challenges.

**Navigating Role of the Acquired Firm**

We expect that, in the context of inherited alliances, the acquired firm can have two important
roles in navigating the relationship between the acquiring firm and the inherited alliance partner.
First, it has the potential to act as a *knowledge broker* that transfers knowledge and provides
knowledge linkages between the acquiring firm and the inherited alliance partner. Second, it can
act as a *relational mediator*, helping to resolve potential conflicts between the acquiring firm and
the inherited alliance partner.

*Acquired firm as a knowledge broker.* Although the acquiring firm becomes the formal
partner in the alliance after the acquisition, the acquired alliance partner does not disappear,
which gives it the possibility to broker relevant knowledge between the acquirer and the
inherited alliance partner. The acquired alliance partner’s understanding of the technological
resources and capabilities of the inherited alliance partner allows it to transfer specific technical
information about the inherited alliance to the acquiring firm (Aldrich & Herker, 1977). Over the
course of the alliance, the acquired firm has also developed knowledge about how the alliance
operates (Schreiner, Kale, & Corsten, 2009). The acquired firm can therefore transfer to the
acquiring firm information on what processes are implemented for realizing particular alliance
objectives. In sum, the acquired alliance partner is able to select relevant information on the inherited alliance, consolidate it and transfer it in an efficient way to the acquiring firm, while protecting the parent from information overload (Soderberg & Romani, 2017) and ultimately reducing information asymmetries.

**Acquired firm as a relational mediator.** Being involved in the ongoing alliance, the acquired firm has also developed the ability to resolve conflicts with the inherited alliance partner (Zollo et al., 2002). Together, the acquired firm and the inherited alliance partner have developed processes by which they can reach a mutually acceptable and beneficial compromise in case of conflicts or disagreements (Kaplan, Norton, & Rugelsjoen, 2010; Parry, Song, & Spekman, 2008). These processes can be valuable in the situation when a company that was not involved in the alliance acquires one of the partners. This is because it is likely that after the acquisition of the alliance partner, the acquiring firm may want to reorganize the inherited alliance. The acquiring firm may request standardization and streamlining of alliance activities, including personnel changes and adjustments in communication patterns as well as refinement of alliance performance evaluation. This, however, may yield disagreements from the inherited alliance partner. In such conflict-prone situations, the acquired firm can mediate and help to resolve the dispute between the acquiring firm and the inherited alliance partner by arriving at an acceptable compromise for both of them (Johnson & Duxbury, 2010). Consequently, such action has the potential to relieve (some of) the coordination considerations of the acquiring firm.

While the above arguments indicate that the acquired alliance partner can play an important role in addressing the core challenges of managing inherited alliances, we expect that the ability of the acquired alliance partner to execute these navigating roles depends on particular conditions (i.e., technological relatedness between the acquired firm and the inherited alliance
partner, history of joint collaboration between the acquired firm and the inherited alliance partner, and the post-acquisition integration strategy). In the next section, we develop hypotheses on how these conditions influence the resilience of inherited alliances.

**Research Hypotheses**

*Technological relatedness between the acquired firm and the inherited alliance partner.*

Technological relatedness refers to the extent to which the knowledge bases of alliance partners cover similar domains. Extant literature on inter-firm learning suggests that the relatedness of partners’ technological knowledge bases is an important determinant of mutual understanding of each other’s technological capabilities (Cohen & Levinthal, 1990; Lane & Lubatkin, 1998). Firms operating in highly similar technological domains will be able to evaluate which resources are needed and how these resources should be combined for accomplishing the alliance goals. They will also share tacit process knowledge (Lane and Lubatkin, 1998) required for identification of commercial applications and transformation of such knowledge into new applications (Rindfleisch and Moorman, 2001). As such, technologically related partners have richer and more productive information exchanges than partners that share less technological similarities.

In the event of an alliance partner acquisition, having deep technological understanding of the inherited alliance partner’s resources and capabilities is likely to improve the acquired firm’s ability to broker important and relevant information to the acquiring firm, and consequently reduce the informational asymmetries between the acquirer and the inherited alliance partner. When the acquired firm has a deep understanding of the technological domain of its partner, it can provide more concise information to the acquiring firm and better protect it from unnecessary information overload. The acquired firm is therefore more able to execute the
knowledge broker role as it can better explain and justify particular resource needs of the inherited alliance to the acquiring firm. Having clear and precise information about the inherited alliance’s technicalities is likely to increase the willingness of the acquiring firm to invest in the alliance, increasing the resilience of the inherited alliance. We therefore expect:

_Hypothesis 1: The greater the technological relatedness between the acquired firm and the inherited alliance partner, the higher the resilience of the inherited alliance._

**History of joint collaboration between the acquired firm and inherited alliance partner.**

Through building joint collaboration history, alliance partners engage in a learning process about how to work together effectively (Grant & Baden-Fueller, 2004; Parkhe, 1991). They develop shared language, i.e. the understanding among themselves based on spoken and/or written language that helps them communicate more effectively and is foreign to outsiders (Koka & Prescott, 2002), which improves the quantity and quality of knowledge transfer (Eisenhardt & Martin, 2000). In the process of accumulating a history of collaboration, alliance partners also develop mutual trust, i.e. the mutual confidence that no party to an exchange will exploit another’s vulnerabilities (in Parkhe, 1991: Sabel, 1993, p.1133), improving alliance stability (e.g. Krishnan, Martin, & Noorderhaven, 2006). Trust improves partners’ capacity to resolve conflicts (Kale et al., 2000) and to reach a mutually beneficial compromise (Zollo et al., 2002), also in periods of alliance instability (Lin & Germain, 1998; Martin, Swaminathan, & Mitchell, 1998).

We expect that the shared language advantage present in alliances with an extensive joint collaboration history helps the acquired firm to navigate more effectively the acquiring firm’s information asymmetry challenges. Having developed shared language with the inherited alliance partner increases the ability of the acquired firm to transmit knowledge about the
inherited alliance. In this way, the acquired firm is likely to be better able to play the knowledge broker role and transfer its knowledge to the acquiring firm about how to work with the inherited alliance partner and about how the inherited alliance operates. Consequently, being able to rely on a party that has a thorough understanding of how the inherited alliance goals can be the most effectively achieved will decrease the acquiring firm’s information asymmetry concerns related to such an inherited alliance.

At the same time, trust developed through the joint collaboration history enables the acquired firm to mediate more effectively any relational problems that may arise between the acquiring firm and the inherited alliance partner. The emergence of conflict or at least disagreements between the acquiring firm and the inherited alliance partner is rather inevitable due to the need of formal incorporation of the acquiring firm into the partnership in the post-acquisition period (Datta, 1991). This implies substantial uncertainty for the inherited alliance and room for distrust between the acquiring firm and the inherited alliance partner. The mutual trust built through collaboration history with the inherited alliance partner allows the acquired firm to more effectively mediate the disputes (Lioukas & Reuer, 2015; Zollo et al., 2002). The inherited alliance partner will more likely trust in the acquired firm’s ability to choose the right conflict resolution mechanisms, and consequently, it will make the acquired firm’s relational mediation process more effective. In partnerships, in which there is no extensive history of joint collaboration, it is less likely that there will be enough trust between the partners to follow the relational mediation strategies of the acquired firm. In this way, when trust is existent, the acquired firm can reduce the coordination issues and contribute to recovering the inherited alliance stability more effectively than when it has no joint collaboration history with the inherited alliance partner.
Based on the foregoing discussion, we expect that the acquired firm is better able to reduce the information asymmetries and coordination considerations in an inherited alliance in which the history of collaboration between the acquired and inherited partner is extensive. This will ultimately lead to higher inherited alliance resilience. Relying on prior alliance research, we consider two manifestations of joint collaboration history. While the first one refers to the history of prior transactions between the acquired firm and the inherited alliance partner (e.g. Gulati 1995), the other one refers to the pre-acquisition age of the inherited alliance (e.g. Hashai, Kafouros, & Buckley, 2015). Hence, we hypothesize:

**Hypothesis 2a:** A history of prior alliance transactions between the acquired and inherited alliance partner increases the inherited alliance resilience.

**Hypothesis 2b:** The longer the inherited alliance existed prior to the alliance partner acquisition, the higher the inherited alliance resilience.

**Preservation integration strategy.** Acquisition literature stresses that acquiring firms can choose between different integration approaches when it comes to the incorporation of acquired firms into their structures. Generally, an acquiring firm has a choice between preservation and absorption strategies (Puranam, Singh, & Zollo, 2006). The first one is concerned with structural separation, i.e. the acquired firm is under the ownership of the acquirer but these two entities remain distinct and operate separately. The latter is related to structural integration, i.e. the incorporation of the acquired firm into the acquirer’s organizational boundaries and adjustment of its current operations as well as location of authority, work space, rules and procedures (Cording, Christmann, & King, 2008; Puranam et al., 2006; Puranam, Singh & Chaudhuri, 2009).
When the acquired firm is integrated through a preservation strategy, it maintains substantial autonomy and is likely to conduct its business in the same or highly similar way than before the acquisition. When preserving the acquired firm, the acquiring firm maintains a boundary between itself and the acquired firm. Therefore, a preservation strategy gives substantial independence to the acquired firm in alliance related decision-making processes. In that sense, the acquired firm retains the management responsibilities that it had up to the event of the acquisition and remains the main party interacting with the inherited alliance partner. Therefore, the inherited alliance is unlikely to experience a major disruption due to the new ownership of its partner. In contrast, when the acquired firm is absorbed, its operations are combined with those of the acquiring firm within the same set of organizational boundaries. More precisely, the processes become standardized, common hierarchical control is introduced, and thus the previous organizational arrangement of the acquired firm is largely eliminated (Pablo, 1994; Puranam et al., 2006). In this latter case, we expect that coordination and information asymmetry challenges are more outspoken, jeopardizing the resilience of the inherited alliance. We therefore hypothesize:

Hypothesis 3: The choice for a post-acquisition preservation (absorption) strategy is likely to increase (decrease) inherited alliance resilience.

METHOD

Data and Sample

To test our hypotheses, we constructed a new dataset of inherited alliances in the biotechnology industry. We rely on this industry because of its rich activity in both alliances and acquisitions (Hagedoorn and Duysters, 2002). Initially, we identified 107 majority acquisitions pursued by the 50 best performing biotechnology firms (based on their 2004 revenue) over the period
between 1996 and 2010. Next, we determined in which of these acquisitions the inherited alliances were present. Following these steps, we identified 63 acquisition deals, in which the acquired firm was engaged in active alliances. The total number of all identified inherited alliances was 232. Because we were not able to obtain data for some of the inherited alliances, the final sample reduced to 213 inherited alliances.

Data Sources

We identified the acquisitions using SDC Mergers & Acquisitions, corporate reporting (annual reports, SEC 10-K and 20-F) and acquisition statements (8-K fillings). Subsequently, we searched in the LexisNexis\textsuperscript{2} database for press releases providing information whether the acquired firm was engaged in strategic alliances at the moment of the acquisition. Once we determined the active alliances, we looked for specific pre- and post-acquisition information about each inherited alliance. More specifically, we used archival press releases from LexisNexis database and annual reports to determine pre- and post-acquisition alliance duration. For all alliances, we were able to find their exact starting dates. For some alliances, we were also able to find their termination date. For those alliances for which we did not find an exact termination date, we followed the approach of Ahuja (2000). More precisely, we assumed that an alliance continued until the last year in which it was mentioned or until the year after the year in which it was formed, whichever was later.

\textsuperscript{2} LexisNexis is a provider of legal, government, business and high-tech information sources. It archives press releases about firms and their activities (e.g. formation and termination of alliances, acquisitions), which allowed us to obtain comprehensive information essential to the completion our study. As previous research shows (e.g. Ahuja & Katila, 2001; Phelps, 2010), SDC Database Alliance & JVs has a low coverage of alliances and therefore using press releases for alliance identification is considered nowadays more effective. We developed a unique search algorithm, which allowed us to find the relevant alliances. The algorithm is available upon request.
We also collected patent information. We used the data from Harvard Patent Network Dataverse to collect the information on the patent classes in which the firms patented, which we used to calculate the technological relatedness between the different parties. In addition, we used VentureXpert to collect data on venture capital investments and LexisNexis press releases, acquisition statement (SEC 8-K filings), and annual reports to gather data regarding the post-acquisition integration strategy. Orbis database and Google search were used to obtain the information on the physical location of the firms. We also triangulated LexisNexis-based data with the ReCap’s Biotech Alliance Database to gain a clear picture of whether the acquirers had themselves entered into alliances with the inherited alliance partners prior to the acquisition as well as whether the acquirers and the inherited alliance partners were connected indirectly via their self-initiated alliances.

**Measures**

**Dependent Variable**

To determine whether an alliance was resilient to an alliance partner acquisition, we considered the industry mean of inherited alliance duration (= 32 months), which represents a measure of central tendency in the dataset. An inherited alliance that was able to continue for at least the mean duration or longer, exhibits a distinctive ability to continuously thrive given the event of an alliance partner acquisition by a third firm, compared to an alliance that was not able to reach that point. It therefore serves well as a benchmarking point of whether the inherited alliance was better able to deal with the event of the alliance partner acquisition. Consequently, the continuation of the inherited alliance for at least 32 months after the acquisition was interpreted to indicate that the inherited alliance was resilient (*alliance resilience to alliance partner acquisition* = 1). If the inherited alliance continued for less than an inherited alliance on average
did, we interpreted this to mean that the inherited alliance was less resilient to the event of alliance partner acquisition \((alliance\ resilience\ to\ alliance\ partner\ acquisition = 0)\).

We also conducted robustness tests (see page X for details) with an alternative DV, in which we consider the inherited alliance resilience as a function of post-acquisition duration, i.e. how long the inherited alliance existed after the acquisition until its termination (in months). The results of these analyses provide highly similar results.

**Independent Variables**

Our first hypothesis suggested a positive effect of *technological relatedness between the acquired firm and inherited alliance partner* on the alliance resilience to an alliance partner acquisition by a third firm. Following previous research (see e.g. Jaffe, 1986; Sampson 2007) we measured the technological relatedness between the two firms as the extent to which the two patent in the same technology classes in the five years period prior to the acquisition. We also conducted robustness checks, in which we applied a three and seven years window and found consistent results. Using this measure allows us to capture the technological position of one partner relative to another (Sampson, 2007). In order to construct this variable, we measured the distribution of patents across patent classifications across the five years preceding the acquisition. This distribution is captured by a multidimensional vector, \(F_i = (F_{i1} \ldots F_{is})\), where \(F_{is}\) represents the number of patents assigned to partner firm \(i\) in patent class \(s\). The measure calculates the technological relatedness between a pair of firms. Technological relatedness varies from 0 to 1, where 1 indicates a perfect overlap in technological base between the firms. The formula for the technological relatedness is denoted as follows:

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\text{Technological relatedness} = \frac{F_i F_i'}{\sqrt{(F_i F'_i)(F_j F'_j)}}
\]
The second hypothesis (2a) tests the impact of prior alliance ties between the acquired firm and inherited alliance partner on the post-acquisition alliance resilience. Using the extensive alliance information both from the ReCap and LexisNexis databases and following Reuer and Devarakonda (2017), we counted the number of alliances between the firms during the five years prior to the focal alliance. In our sample, we did not encounter cases in which the acquired firm and the inherited alliance partner had more than one other tie in that period. We coded this variable as 1 if the firms had an alliance in the past five years prior to the focal alliance. If there were no prior ties between the two, we coded it with 0.

To examine whether the pre-acquisition alliance duration positively influences the alliance resilience to an alliance partner acquisition in hypothesis 2b, we calculated the number of months an alliance existed from the moment of its formation to the acquisition of one of the alliance partners. We use a log-transformed variable to account for skewness of the data.

The last hypothesis argues that when an acquired firm is preserved after its acquisition, it is more likely that the alliance in which it was engaged is resilient to the alliance partner acquisition. To assess whether the acquired firm was structurally absorbed or preserved, we examined press releases in the LexisNexis database in the years after the acquisition to check whether the acquired firm was continuously traceable under its name (Paruchuri et al., 2006; Puranam et al., 2006; 2009). Simultaneously, we also checked annual reports and SEC 8-K acquisition statements to see whether the acquired firm was reported to function as a distinct operational unit after the acquisition, for example, as a wholly owned subsidiary or separate unit or division (Paurchuri, 2006), to account for cases that might have changed names for legal purposes, such as clinical trials but their operations remained autonomous. If the acquired firm kept showing up under its name in the press releases after a year following the acquisition,
indicating that it retained its distinct status as operating entity, or if the acquired firm changed the name but was functioning as a distinct operational unit, we considered that the acquired firm was preserved (\(structural\ preservation = 1\)). However, if the acquired firm was not traceable anymore as a distinct organizational entity in neither the press releases nor company statements, we assumed that it was structurally absorbed (\(structural\ preservation = 0\)). Out of all inherited alliances, 73% of them fell into preservation category, whereas 27% into absorption category.

**Control Variables**

Acquirer’s direct relationships with both the acquired firm and inherited alliance partner may also have an impact on the resilience of the inherited alliance to the alliance partner acquisition by a third firm. Therefore, we accounted for several aspects. First, we controlled for the characteristics of the relationship between the acquirer and the acquired firm and the acquirer and the inherited alliance partner. We included the variable *prior alliance tie between the acquirer and acquired firm* (Zaheer, Hernandez, & Banerjee, 2010) since such a tie provides the acquiring firm with information about how the acquired firm manages its alliances, and therefore the acquiring firm can anticipate how it can approach the inherited alliances by itself. We coded this variable with 1 if the acquisition was preceded by a strategic alliance between the acquiring and acquired firm, and with 0 otherwise. Similarly, we accounted for recent acquirer’s direct collaboration experience with the inherited alliance partner and included the variable *prior ties between the acquiring firm and the inherited alliance partner* (Reuer & Devarakonda &., 2017). We measured this variable by looking whether the two had an alliance with each other up to five years prior to the acquisition of the alliance partner. We coded the variable with 1 if such prior alliance ties were present, if not, we coded it with 0. We also looked a step further and controlled for the *indirect ties between the acquiring firm’s original alliances and the inherited alliance*
partner. We used a dummy variable to indicate whether in the previous five years the acquiring firm and the inherited alliance partner had at least one alliance partner in common (Boyd & Spekman, 2008).

In addition to that, we also considered the technological relatedness between acquirer and inherited alliance partner as the extent to which the two are related might influence the recombination potential and thus the incentive to rebound and recover or terminate an alliance (Sampson, 2007). The operationalization of this variable followed the same formula as explained in the independent variables section, only here it concerns the acquirer (instead of the acquired firm) and the inherited alliance partner. We also controlled for the technological relatedness between the acquirer and the acquired firm.

Furthermore, we also included several control variables to account for firm specific characteristics for both the acquirer and the inherited alliance partner. Depending on the extent to which the acquiring firm is engaging in acquisitions and alliances might affect its capacity in terms of resource and managerial commitments as well as influence its managerial capabilities (Rothaermel & Deeds, 2006). Hence, we controlled for i) Acquirer’s acquisition intensity, which we calculated as the total number of acquisitions the firm has pursued in the past five years, ii) Acquirer’s alliance experience, which we operationalized as the total number of alliances the firm has formed in the past five years, iii) Number of all inherited alliances in the year of acquisition, which we computed as the total number of alliances brought along acquisitions, the acquirer had to manage in the year of acquisition. Finally, we also considered the number of unique VC investors investing in acquirer as a proxy for quality and resource capacity (Reuer & Devarakonda, 2017). Similarly, we accounted for the inherited alliance partner’s acquisition intensity, inherited alliance partner’s alliance experience, number of unique VC investors
investing in the inherited alliance partner and whether the alliance partner of the acquired firm was a Big Pharma firm (=1 if yes, =0 if not) according to the revenue in the year of acquisition.

Estimation Approach

Given the dichotomous nature of our dependent variable (inherited alliance resilience), we used logistic regression estimation model with robust standard errors clustered by acquiring firms. We also included year dummies to account for macro-economic changes over time. We chose this approach because we do not encounter censoring issue regarding the inherited alliance duration, i.e. we were able to collect data on their starting and termination dates (George, Seals, & Aban, 2014; Yu & Canella, 2007).

RESULTS

In Table 1, we present descriptive statistics and correlations. We observe that 28% of alliances experiencing an event of alliance partner acquisition is resilient to this re-configurational change and that in 11% of alliances the acquired firm and its alliance partner had prior alliance ties. The mean technological relatedness between the acquired firm and its alliance partner is 0.30. We also observe that the average pre-acquisition duration of an inherited alliance is equal to 34 months and that more than 70% of the inherited alliances were managed under the post-acquisition preservation strategy. To check for potential multicollinearity issues, we did several checks. There is no correlation above the common threshold of 0.8. Furthermore, the average (=1.70) and the highest (=3.15) variance inflation factor values are below the common multicollinearity threshold of 5 and 10 (Cohen, Cohen, West, & Aiken, 2003; Kleinbaum, Kupper, & Muller, 1988). This evidence allows us to conclude that our data do not suffer from multicollinearity.
Table 2 presents the results of the stepwise logistic regression analyses in which we tested the determinants of alliance resilience to an alliance partner acquisition. Model 1 is the baseline model and includes only the control variables. In models 2, 3, 4, and 5 we test the hypotheses separately, while in model 6 we included all variables together. To discuss the findings of our analyses, we will make use of the results in Model 6, since the general insights derived from model 1 to 5 are rather similar.

Contrary to our expectations, the effect of technological relatedness between the acquired firm and inherited alliance partner is not significant, thus failing to provide support for H1. With respect to the history of joint collaboration history, we considered its two manifestations and the analysis provides compelling results with respect to them. Hypothesis 2a states that prior alliance ties between the acquired firm and its alliance partner will increase the likelihood of alliance resilience to the alliance partner acquisition. The result is, however, not significant and thus we find no support for H2a. In our hypothesis 2b, we expected that the longer an alliance existed prior to the acquisition, the higher the likelihood of alliance resilience to the alliance partner acquisition. The coefficient for the pre-acquisition alliance duration is positive and significant, which provides support to H2b. In our last hypothesis, we expected that if the acquired firm will be preserved after the acquisition, it is more likely that the inherited alliance will be able to withstand and recover from the alliance partner acquisition. The result is positive and significant, allowing us to conclude that H3 is supported.
Looking at the control variables, our results also point to the positive role of prior direct ties between the acquirer and the inherited alliance partner, and inherited alliance partner’s alliance experience. In relation to the first factor, it seems that prior direct ties between the acquirer and inherited alliance partner are an important predictor of alliance resilience to the alliance partner acquisition. In such a case, the two parties have their partner-specific coordination patterns, routines and trust (Gulati, 1995; Gulati & Gargiolo, 1999; Lioukas & Reuer, 2015), and can use this basis to operate the inherited collaboration. With respect to the second factor – inherited alliance partner’s alliance experience implies that the inherited alliance partner might be more able to effectively address and manage different situations in alliances (Schreiner, Kale, & Corsten, 2009).

Our results also point to two characteristics that negatively influence the likelihood of alliance resilience to an acquisition of an alliance partner. We have found that the greater the acquisition activity of the acquirer, the lower the likelihood of alliance resilience to an alliance partner acquisition. Pursuing acquisitions implies high costs and resource deployments (e.g. Balakrishnan & Koza, 1993; King, Dalton, Daily, & Covin, 2004). The more acquisitions the acquirer pursues, the more resources it will need to complete these takeovers and integrate the acquired firms. Therefore, it is likely that there will be not enough resources left for the alliance of the acquired firm, hindering the recovery from the alliance partner acquisition. We observe the same pattern for the number of all inherited alliances the acquiring firm inherits in an acquisition(s). It will require substantial resource commitments and managerial attention of the acquirer to deal with all these inherited alliances and substantial navigation efforts from the acquired firm(s). Thus, while the resource and managerial requirements are rather high, the acquirer does not have sufficient resource and managerial capacity to satisfy the needs of all of
these partnerships (Daft & Lengel, 1986; Egelhoff, 1991; Tushman & Nadler, 1978). We do not find significant results for the remaining control variables.

**Additional Tests**

The aim of this study was to reveal under which conditions the inherited alliances are able to exhibit more resilience to the event of an alliance partner acquisition. An alternative way to look at this issue is to study the post-acquisition alliance duration, i.e. how long the inherited alliance existed after the acquisition until its termination (in months). While this alternative approach does not include the benchmarking procedure, it can provide somewhat similar insights on whether an alliance is likely to be ended sooner or later depending on particular conditions. As mentioned earlier, our data does not suffer from censoring, hence standard regression procedures suffice (George, Seals, & Aban, 2014; Yu & Canella, 2007). In Table 3, we present three models. In the first model, we present results of a multiple regression analysis with the dependent variable: number of months an inherited alliance continued after the alliance partner acquisition, which is a continuous variable. In the second model, we also performed a multiple regression analysis with the difference that we log-transformed the dependent variable to account for the fact that the dependent variable does not include negative values. Finally, in the third model we performed Cox event history analysis, in which we looked at the hazard rates of the termination happening earlier vs. later. The results of all three regressions provide highly similar results.

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Insert Table 3 about here
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DISCUSSION

In this study, we set out to examine the resilience of an alliance to an acquisition of one alliance partner by a third firm. In particular, we looked at the conditions under which the acquired firm is able to navigate the unique challenges associated with inherited alliances. Drawing on a quantitative analysis of inherited alliances in biotechnology sector, we found two conditions under which alliance resilience to an acquisition is more likely: (i) the longer the inherited alliance existed prior to the alliance partner acquisition and (ii) if the acquiring firm preserved the acquired firm. In the following, we discuss the core insights of this study and show how they contribute to the existing post-formation alliance dynamics and acquisition literatures.

Implications for Alliance and Acquisition Research

Recent research has called for further exploration of partner reconfiguration patterns in alliances and their implications (e.g. Bakker, 2016). We contribute to addressing this call by pointing to a particular type of post-formation configurational change in alliances that has deserved limited attention, the acquisition of one of the alliance partners by a third firm. We identified specific challenges that such an event brings along for the inherited alliance: information asymmetries between the acquiring firm and the inherited alliance partner, and coordination challenges. Moreover, we posited that the acquired firm is able to help the acquiring firm in navigating these challenges by acting as a knowledge broker and a relational mediator. We found that the acquired firm is able to execute better these roles when the alliance lasted longer prior to the acquisition. Our results also show that inherited alliance resilience is higher when the acquired firm was structurally preserved after the acquisition.

Relying on the insights from organizational learning literature, prior research has highlighted the importance of making a distinction between general and partner-specific
experience (e.g. Gulati, Lavie, & Singh, 2009; Hoang & Rothaermel, 2005). In our study, we considered two manifestations of partner-specific collaboration history and observe that one of these manifestations is particularly beneficial in the context of inherited alliance resilience. Specifically, we find that the pre-acquisition duration of the inherited alliance, and thus partner-specific experience within a particular alliance, rather than repeated alliance ties, and thus partner-specific experience across alliances, exerts an important influence over alliance resilience. One possible explanation of the non-significant effect of repeated ties between the acquired firm and the inherited alliance partner on inherited alliance resilience is that prior alliances can be a better predictor of formation of a new alliance with the same partner (Reuer et al., 2002) or how to design it (Gulati, 1995). However, prior alliance ties may not be enough to improve the chances of withstanding and recovering from a major re-configurational change in an alliance. While prior alliance ties can provide reliable information about past performance with a particular alliance partner based on interactions in previous alliances (see Gulati, 1995), in the event of the acquisition of one of the alliance partners this experience might not provide enough recent and relevant information. In contrast, a single long-lasting alliance provides information related to current history (Hashai et al., 2015) that might be more relevant to address a re-configurational change. Hence, in the context of acquisitions, the acquired firm is going to be better able to fulfill its navigating roles using present experience.

Further, our results inform the post-formation alliance dynamics literature by examining the role of the technological relatedness between the acquiring firm and the inherited alliance partner in explaining the alliance resilience to an alliance partner acquisition. Existing alliance literature identified high technological relatedness between alliance partners as an enabler of deep mutual understanding of each other’s technological capabilities (e.g. Ahuja, 2000; Lane &
Lubatkin, 1998). We expected that, the more the acquired firm and the inherited alliance partner are technologically related, the greater the potential the acquired firm has to broker the technology-based knowledge to the acquiring firm, and thus to reduce the acquirer’s informational disadvantage. Yet our findings reveal that having a high level of technological relatedness with the inherited alliance partner does not significantly improve the acquired firm’s ability to broker knowledge about the partner’s resources and capabilities. A possible explanation for this result is that extensive shared technological understanding between alliance partners can be more powerful when structuring collaboration arrangements rather than in the post-formation period in which alliance-specific knowledge may be more relevant than the general shared technological know-how (Reuer et al., 2002). Throughout a collaboration, partnering firms might have developed sufficient understanding of the one another’s resources and capabilities. Hence, independently of the level of the technological relatedness with the inherited alliance partner, the acquired firm might be able to reduce sufficiently the information asymmetries of the acquiring firm. For that reason, we might not be finding the specific impact of high technological relatedness on the inherited alliance resilience. Future research could consider other aspects of technology that may have an impact on the alliance resilience. For example, our data did not allow us to take a deeper look at the technology or product development stage. The more the technology and/or product is developed or marketed in the alliance, the less uncertainties and knowledge gaps are present for the partners, and thus acquired firm’s ability to reduce the information asymmetries between the acquiring firm and the inherited alliance partner would be higher.

Our study also helps to advance our knowledge about the consequences of particular post-acquisition integration approaches. Typically, acquisition scholars have focused their efforts
on studying the impact of post-acquisition integration choices on post-acquisition firm performance (e.g. Chaudhuri & Tabrizi, 1999; Cording et al., 2008; Datta, 1991; Paruchuri et al., 2006; Puranam et al., 2006; Zollo & Singh, 2004). To the best of our knowledge, previous acquisition research does not go beyond the direct consequences of acquisitions for the acquiring firm. Our paper shows that post-acquisition integration strategy may have broader consequences, i.e. for other stakeholders than just the acquiring and acquired firm. In particular, we observe in our analysis that alliances, in which the alliance partner (=acquired firm) has been preserved are more likely to have the ability to deal with alliance partner acquisition. As such, the inter-firm cooperation activity of the remaining alliance partner (=inherited alliance partner) depends largely on how its alliance partner (=acquired firm) has been integrated. In other words, the post-acquisition integration strategy does not only influence the acquirer’s performance, but also the operations of inherited alliance partners.

Limitations

Our study has some limitations, which at the same time provide an interesting starting point for future research. First, we tested out theory on a sample of inherited alliances in the biotechnology industry. Although we expect that our findings are likely to hold for other alliance and acquisition intensive industries, future research can test the generalizability of our study. Second, while this study considered dyadic alliances, future work could examine the dynamics of multiparty alliances and/or joint ventures. The involvement of three or more firms may radically change the need for the navigating role of the acquired firm. Third, our study provided the first evidence that the acquired firm can play an important role in making the inherited alliance resilient to the acquisition of the alliance partner. Due to data limitations, we were unable to capture the actual process of knowledge brokerage and relational mediation. Using a longitudinal...
case study approach, future research could investigate the process of managing information asymmetries and coordination challenges by the acquired firm. In this way, we could develop deeper insights into how the involvement of the acquired firm evolves over time and at which post-acquisition stages this involvement is the most essential for the resilience of the inherited alliance. Finally, we would also like to encourage scholars to study whether the inherited alliances that withstand and recover from the acquisition of the alliance partner open new collaboration opportunities or possibly create conflicts in the alliance portfolio of the acquiring firm and force the acquirer to terminate some of its existing alliances. Determining the conditions under which formation of new alliances and termination of old ones is more likely, would provide further interesting insights into post-formation alliance (portfolio) dynamics.

CONCLUSION

In this paper, we pointed to another type of re-configurational partner change, i.e. a situation in which one of the alliance partners is acquired by an external firm. We posited and examined the role of the acquired firm as a navigator of the coordination challenges and information asymmetry between the acquiring firm and the inherited alliance partner, which facilitates the alliance resilience to the alliance partner acquisition. Our empirical analysis provides strong support that especially the alliance specific history of joint collaboration as well as preservation of the acquired firm help the alliance to withstand and recover from this event. Addressing this type of change allows us to show a new source of dynamism in alliances that previous research has largely neglected.
REFERENCES


**Table 1. Descriptive statistics and correlations**

| Variable                                                                 | Mean  | S.D.  | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   |
|--------------------------------------------------------------------------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Alliance resilience                                                     | 0.28  | 0.45  | 1.00 |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Technological relatedness between the acquired firm and inherited alliance partner | 0.30  | 0.42  | 0.03 | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Prior ties between the acquired firm and inherited alliance partner     | 0.11  | 0.31  | 0.02 | 0.01 | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Pre-acquisition alliance duration (ln)                                   | 3.02  | 1.13  | 0.19 | 0.16 | -0.07 | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Preservation post-acquisition integration strategy                       | 0.73  | 0.44  | 0.18 | 0.19 | -0.03 | 0.03 | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Pre-acquisition alliance duration (ln)                                   | 3.02  | 1.13  | 0.19 | 0.16 | -0.07 | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Preservation post-acquisition integration strategy                       | 0.73  | 0.44  | 0.18 | 0.19 | -0.03 | 0.03 | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Technological relatedness between acquirer and acquired firm            | 0.14  | 0.30  | -0.11 | 0.06 | 0.05 | -0.11 | 0.00 | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |      |
| Prior ties between the acquirer and inherited alliance partner          | 0.11  | 0.28  | -0.05 | 0.24 | -0.06 | -0.13 | -0.09 | 0.45 | 1.00 |     |      |      |      |      |      |      |      |      |      |      |      |
| Prior ties between acquirer and acquired firm                           | 0.24  | 0.43  | -0.03 | 0.03 | 0.37 | -0.02 | -0.35 | -0.06 | -0.05 | 1.00 |     |      |      |      |      |      |      |      |      |      |
| Prior ties between acquirer and inherited alliance partner              | 0.10  | 0.30  | 0.18 | 0.07 | 0.04 | 0.03 | 0.09 | -0.01 | -0.08 | -0.04 | 1.00 |     |      |      |      |      |      |      |      |      |
| Indirect ties between the acquirer’s home-grown alliances and inherited alliances | 0.20  | 0.40  | -0.02 | -0.04 | 0.13 | -0.03 | 0.12 | -0.12 | 0.12 | 0.15 | 1.00 |     |      |      |      |      |      |      |      |
| Acquirer’s acquisition intensity                                        | 3.04  | 2.36  | -0.17 | 0.04 | -0.06 | 0.08 | -0.12 | -0.28 | -0.20 | 0.18 | 0.01 | 0.01 | 1.00 |     |      |      |      |      |      |
| Inherited alliance partner’s acquisition intensity                      | 2.33  | 4.40  | 0.08 | -0.12 | -0.02 | 0.06 | 0.13 | 0.06 | -0.08 | -0.13 | 0.16 | 0.18 | -0.08 | 1.00 |     |      |      |      |      |
| Acquirer’s alliance experience                                          | 27.29 | 18.21 | -0.14 | 0.06 | 0.14 | -0.04 | -0.12 | -0.04 | -0.08 | 0.38 | 0.03 | 0.03 | 0.14 | 0.72 | 0.08 | 1.00 |     |      |      |
| Inherited alliance partner’s alliance experience                        | 11.12 | 14.65 | 0.18 | -0.03 | 0.12 | 0.10 | 0.16 | -0.03 | -0.12 | -0.03 | 0.14 | 0.30 | -0.12 | 0.61 | -0.10 | 1.00 |     |      |      |
| Number of all inherited alliances in the year of acquisition            | 7.55  | 6.32  | -0.10 | 0.09 | 0.24 | 0.02 | 0.23 | 0.39 | 0.07 | 0.00 | 0.04 | 0.07 | -0.15 | 0.11 | 0.14 | 0.06 | 1.00 |     |      |
| Number of unique VC investors investing in acquirer                     | 0.35  | 0.86  | 0.19 | 0.00 | -0.14 | 0.06 | 0.08 | -0.14 | -0.05 | -0.18 | 0.05 | -0.05 | -0.13 | 0.04 | -0.08 | -0.17 | -0.02 | 1.00 |     |
| Number of unique VC investors investing in inherited alliance partner   | 0.67  | 2.02  | -0.12 | 0.03 | -0.00 | -0.07 | -0.06 | 0.16 | 0.13 | 0.05 | -0.11 | -0.09 | -0.02 | -0.14 | 0.04 | -0.15 | 0.01 | -0.06 | 1.00 |
| Inherited alliance partner is a Big Pharma firm                          | 0.16  | 0.37  | 0.04 | -0.15 | 0.05 | -0.01 | 0.12 | 0.13 | -0.03 | -0.16 | 0.15 | 0.31 | -0.12 | 0.60 | -0.09 | 0.65 | 0.19 | -0.15 | -0.15 | 1.00 |

N=213. Mean VIF=1.70, with a highest VIF of 3.15 for the acquirer’s alliance experience.
The Resilience of Inherited Alliances: Navigating the Challenges of Alliance Partner Acquisition

Table 2. Logistic regression results (DV alliance resilience: =1 if an alliance continues to exist after the alliance partner acquisition for longer than the sample mean (32 months); =0 otherwise).

<table>
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<th>(3)</th>
<th>(4)</th>
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<th>(6)</th>
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<td>Technological relatedness between the acquired firm and inherited alliance partner</td>
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<td>-0.171</td>
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<td></td>
<td>(0.561)</td>
<td>(0.630)</td>
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<td>0.672</td>
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<td></td>
<td>(0.792)</td>
<td>(0.948)</td>
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<td>Pre-acquisition alliance duration (ln)</td>
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<td>0.500***</td>
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<td></td>
<td>(0.212)</td>
<td>(0.184)</td>
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<tr>
<td>Preservation post-acquisition integration strategy</td>
<td>1.211***</td>
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<td></td>
<td>(0.430)</td>
<td>(0.410)</td>
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<td>-0.805</td>
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<td>(0.923)</td>
<td>(0.929)</td>
<td>(0.933)</td>
<td>(0.841)</td>
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<td>-0.124</td>
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<td></td>
<td>(0.635)</td>
<td>(0.687)</td>
<td>(0.633)</td>
<td>(0.667)</td>
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<td>(0.597)</td>
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<td>Prior ties between the acquirer and acquired firm</td>
<td>0.250</td>
<td>0.224</td>
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<td>0.226</td>
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<td>(0.468)</td>
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<td>(0.570)</td>
<td>(0.496)</td>
<td>(0.431)</td>
<td>(0.605)</td>
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<td>Prior ties between acquirer and inherited alliance partner</td>
<td>1.304**</td>
<td>1.265**</td>
<td>1.301**</td>
<td>1.344**</td>
<td>1.287**</td>
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<td>(0.607)</td>
<td>(0.661)</td>
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<td>Indirect ties between the acquirer’s home-grown alliances and inherited alliances</td>
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<td>-0.535</td>
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<td>-0.723</td>
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<td>(0.746)</td>
<td>(0.739)</td>
<td>(0.713)</td>
<td>(0.753)</td>
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<td>(0.767)</td>
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<td>-0.249</td>
<td>-0.304**</td>
<td>-0.251</td>
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<td>(0.162)</td>
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<td>-0.048</td>
<td>-0.055</td>
<td>-0.050</td>
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<td>(0.068)</td>
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<td>(0.068)</td>
<td>(0.066)</td>
<td>(0.072)</td>
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<td>0.007</td>
<td>0.014</td>
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<tr>
<td>Inherited alliance partner’s alliance experience</td>
<td>0.052***</td>
<td>0.051***</td>
<td>0.051***</td>
<td>0.050***</td>
<td>0.046***</td>
<td>0.041***</td>
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<td>(0.017)</td>
<td>(0.015)</td>
<td>(0.015)</td>
<td>(0.019)</td>
<td>(0.015)</td>
<td>(0.013)</td>
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<tr>
<td>Number of all inherited alliances in the year of acquisition</td>
<td>-0.056</td>
<td>-0.061*</td>
<td>-0.059</td>
<td>-0.075**</td>
<td>-0.081**</td>
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<td>(0.036)</td>
<td>(0.036)</td>
<td>(0.038)</td>
<td>(0.036)</td>
<td>(0.038)</td>
<td>(0.044)</td>
</tr>
<tr>
<td>Number of unique VC investors investing in acquirer</td>
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<td>0.501*</td>
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<td>0.468*</td>
<td>0.516</td>
<td>0.503</td>
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<td>(0.300)</td>
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</tr>
<tr>
<td>Number of unique VC investors investing in inherited alliance partner</td>
<td>-0.123</td>
<td>-0.118</td>
<td>-0.122</td>
<td>-0.089</td>
<td>-0.126</td>
<td>-0.085</td>
</tr>
<tr>
<td></td>
<td>(0.089)</td>
<td>(0.090)</td>
<td>(0.090)</td>
<td>(0.092)</td>
<td>(0.095)</td>
<td>(0.099)</td>
</tr>
<tr>
<td>Inherited alliance partner is a Big Pharma firm</td>
<td>-0.503</td>
<td>-0.426</td>
<td>-0.504</td>
<td>-0.237</td>
<td>-0.268</td>
<td>-0.024</td>
</tr>
<tr>
<td></td>
<td>(0.858)</td>
<td>(0.816)</td>
<td>(0.858)</td>
<td>(0.803)</td>
<td>(0.861)</td>
<td>(0.810)</td>
</tr>
<tr>
<td>Observations</td>
<td>213</td>
<td>213</td>
<td>213</td>
<td>213</td>
<td>213</td>
<td>213</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.156</td>
<td>0.158</td>
<td>0.157</td>
<td>0.186</td>
<td>0.182</td>
<td>0.215</td>
</tr>
<tr>
<td>Log lik.</td>
<td>-106.053</td>
<td>-105.807</td>
<td>-105.951</td>
<td>-102.287</td>
<td>-102.763</td>
<td>-98.719</td>
</tr>
<tr>
<td>Chi-squared</td>
<td>455.751***</td>
<td>605.214***</td>
<td>449.365***</td>
<td>791.998***</td>
<td>315.254***</td>
<td>849.689***</td>
</tr>
</tbody>
</table>

Note. All regressions were estimated using clustered (robust) standard errors, which are reported in parentheses. The significance levels are indicated by * p < 0.10, ** p < 0.05, *** p < 0.01. All models include a set of year dummies, which are not reported for brevity.
### Table 3. Additional tests

<table>
<thead>
<tr>
<th>Analytical technique</th>
<th>(1) Inherited alliance duration (in months)</th>
<th>(2) Inherited alliance duration (ln)</th>
<th>(3) Time to termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent variable</td>
<td>**(OLS)**a</td>
<td>**(OLS DV log-transformed)**a</td>
<td><strong>Cox model</strong>b</td>
</tr>
<tr>
<td>Technological relatedness between the acquired firm and inherited alliance partner</td>
<td>-2.129</td>
<td>0.004</td>
<td>0.990</td>
</tr>
<tr>
<td>Prior ties between the acquired firm and inherited alliance partner</td>
<td>10.717</td>
<td>0.304</td>
<td>0.845</td>
</tr>
<tr>
<td>Pre-acquisition alliance duration (ln)</td>
<td><strong>5.753</strong>*</td>
<td><strong>0.100</strong>*</td>
<td><strong>0.834</strong>*</td>
</tr>
<tr>
<td>Preservation post-acquisition integration strategy</td>
<td><strong>11.049</strong>*</td>
<td><strong>0.248</strong>*</td>
<td><strong>0.772</strong>*</td>
</tr>
<tr>
<td>Inherited alliance partner’s technological relatedness</td>
<td>-15.508*</td>
<td>-0.742**</td>
<td>2.354***</td>
</tr>
<tr>
<td>Inherited alliance partner’s technological relatedness</td>
<td>0.919</td>
<td>0.263</td>
<td>0.919</td>
</tr>
<tr>
<td>Prior ties between the acquired firm and inherited alliance partner</td>
<td>7.650</td>
<td>0.253</td>
<td>0.231</td>
</tr>
<tr>
<td>Prior ties between the acquired firm</td>
<td>6.909</td>
<td>0.179</td>
<td>0.786</td>
</tr>
<tr>
<td>Prior ties between acquired firm and inherited alliance partner</td>
<td>7.348</td>
<td>0.274</td>
<td>0.176</td>
</tr>
<tr>
<td>Acquirer’s technological relatedness</td>
<td>15.886</td>
<td>0.409*</td>
<td>0.560***</td>
</tr>
<tr>
<td>Acquirer’s technological relatedness</td>
<td>9.748</td>
<td>0.219</td>
<td>0.126</td>
</tr>
<tr>
<td>Indirect ties between the acquired firm and inherited alliance partner</td>
<td>2.841</td>
<td>-0.030</td>
<td>0.945</td>
</tr>
<tr>
<td>Acquirer’s alliance experience</td>
<td>8.386</td>
<td>0.210</td>
<td>0.172</td>
</tr>
<tr>
<td>Inherited alliance partner’s alliance experience intensity</td>
<td>-0.327</td>
<td>-0.001</td>
<td>1.002</td>
</tr>
<tr>
<td>Acquirer’s alliance experience</td>
<td>0.897</td>
<td>0.018</td>
<td>0.016</td>
</tr>
<tr>
<td>Inherited alliance partner’s alliance experience</td>
<td>-0.082</td>
<td>0.002</td>
<td>1.000</td>
</tr>
<tr>
<td>Number of all inherited alliances in the year of acquisition</td>
<td>0.184</td>
<td>0.005</td>
<td>0.008</td>
</tr>
<tr>
<td>Number of unique VC investors investing in acquirer</td>
<td>0.497***</td>
<td>0.013***</td>
<td>0.983***</td>
</tr>
<tr>
<td>Number of unique VC investors investing in inherited alliance partner</td>
<td>-1.011**</td>
<td>-0.018</td>
<td>1.050***</td>
</tr>
<tr>
<td>Number of unique VC investors investing in inherited alliance partner</td>
<td>4.830</td>
<td>0.154</td>
<td>0.865</td>
</tr>
<tr>
<td>Inherited alliance partner is a Big Pharma firm</td>
<td>3.479</td>
<td>0.092</td>
<td>0.100</td>
</tr>
<tr>
<td>Inherited alliance partner is a Big Pharma firm</td>
<td>-0.680</td>
<td>-0.018</td>
<td>1.010</td>
</tr>
<tr>
<td>Inherited alliance partner is a Big Pharma firm</td>
<td>0.462</td>
<td>0.024</td>
<td>0.030</td>
</tr>
<tr>
<td>Inherited alliance partner is a Big Pharma firm</td>
<td>-4.580</td>
<td>-0.060</td>
<td>1.417</td>
</tr>
<tr>
<td>Inherited alliance partner is a Big Pharma firm</td>
<td>6.503</td>
<td>0.265</td>
<td>0.360</td>
</tr>
</tbody>
</table>

Note. All regressions were estimated using robust standard errors (clustered by acquiring firm), which are reported in parentheses. The significance levels are indicated by * p < 0.10, ** p < 0.05, *** p < 0.01. Estimates are regression coefficients.

Estimates are hazard ratios (hazard rate > 1 indicates that the probability of an event happening (alliance end) sooner is higher; hazard rate (0,1) indicates that the probability of an event happening later is higher).