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Ex-post governance in joint ventures: Determinants of monitoring by JV boards of directors

ABSTRACT

Considerable advances have been made in corporate governance research in recent years and opportunities exist to consider these developments within alliances. We extend the “scope of operations” hypothesis to the domain of joint ventures. This proposition suggests that the monitoring carried out by boards increases when organizations become more complex. The inherent characteristics of JVs generate unique sources of complexity that are currently unexplored in the corporate governance literature. First, we seek to determine their influence on monitoring by using primary data on JV board monitoring. Second, we adopt the size of JV boards as a proxy for monitoring in order to examine whether the determinants of board size and monitoring in fact coincide and to reveal if certain effects are masked by using board size as a simple proxy for monitoring. Doing so enables us to investigate the black-box of what boards actually do as well as extend governance research to other organizational forms. Our findings confirm that the unique characteristics of JVs influence the information needs by the boards resulting in more monitoring by JV directors. Our findings show there is value in bridging alliance theory and the literature on corporate governance research. We also advance practitioner’s understanding by providing suggestions on how to structure JV boards in relation to their complexity.

INTRODUCTION

Over the last several decades the joint venture literature has significantly advanced our understanding on the design and consequences of alliance governance mechanisms that support collaborations (e.g., Parkhe, 1993; Reuer and Arino, 2007; Poppo and Zenger, 2002; Ryall and Sampson, 2006; Faems, Janssens, Madhok, van Looy, 2008). Despite these academic achievements, research remains predominantly focused on the governance mechanisms that partners have adopted (e.g., various contractual safeguards; administrative controls and incentives through the selection of an equity alliance over a non-equity alliance, etc.) (Williamson, 1985; Parkhe, 1993; Folta, 1998; Reuer and Arino, 2007) and no sufficient research attention has been placed on the actual implementation and usage of governance solutions in joint ventures. This caveat in the literature can be problematic, especially for alliance practitioners that are involved in the design of joint ventures given their need to understand the effectiveness of governance mechanisms for their collaborations.

A second inadequacy of the current JV literature is that the majority of alliance studies predominantly focus on the design and influence of formal contractual governance (e.g., Luo, 2002; Mayer and Argyris, 2004) as well as partners' collaborative history on reducing partner opportunism (Gulati, 1995; Malhotra and Lumineau, 2011). Joint venture parents not only rely upon various contractual and informal governance mechanisms to support their collaborations (e.g., Luo, 2005; Puranam and Vanneste, 2009), but they also use a board as a "formal organ" or governance body to oversee joint ventures (Hewitt, 2005, p. 170). The board of directors in alliance governance research as a formal governance solution remains largely ignored in the literature despite the fact that a) the monitoring function of boards is an essential element in reducing opportunism (Eisenhardt, 1989; Forbes and Milliken, 1999) and b) that early research

by JV scholars have often called for its importance (Schaan, 1983; Harrigan, 1983; Killing, 1988).

Recently JV scholars initiated investigations on the role of the board of directors, but many important opportunities remain in relation to the composition and monitoring role of boards in joint ventures. For instance, research has primarily shed light on the involvement and value of JV boards of directors (Kumar and Seth, 1998; Klijn *et al.*, 2013; Reuer *et al.*, 2014) or the relationship between the distribution of equity and the allocation of board seats (Cuypers, *et al.*, 2016). Scholars have largely ignored the fact that JVs differ in complexity and that their unique characteristics can influence the monitoring function by boards as well. Investigating JV characteristics which affect the relationship between the compositions of the board on the one hand and their extent in monitoring on the other is important for two reasons. First, it significantly contribute to scholarly understanding on the actual implementation and treatment of governance in joint ventures. Second, it also provides valuable insights to senior alliance practitioners who are responsible for the design and composition of boards and allocating monitoring duties to them.

In order to address this gap in the literature we rely on corporate governance research and more specifically agency theory. In particular, we extend the scope of operations hypotheses in agency theory to the domain of joint ventures. This hypothesis suggests that the level of monitoring by directors is determined by a trade-off between the need for monitoring by boards and the associated cost of oversight (Boone et al., 2007). While agency theorists argue that size and age are two important sources of complexity relevant for any type of organization, joint ventures also have unique sources of complexity that can potentially influence the level of monitoring by JV boards. In order to study the level of monitoring by JV boards, it is important

to investigate these inherent characteristics (i.e., JV functional scope, Greenfield/ Acquisitive JV) together with size and age as more general factors. Doing so, enables us to address calls for research to study (unique) conditions that affect the monitoring role of boards in particular (e.g., Raheja, 2005; Tuggle, *et al.*, 2010) and provides practitioners with better insights what drives JV board monitoring.

There are two reasons why we decided to focus on the functional scope (i.e., the number of activities that is undertaken within the JV) as well as whether the JV was established from scratch or was acquired. First, the functional scope of the JV is analogous to the size of the JV. For a standard organization the number of employees are integrated into all the firm's activities whereas in some collaborations not all activities are performed by the joint venture itself (Oxley and Sampson, 2004). Scope is an important source of complexity because it influences behavioural uncertainty among partners and in particular knowledge misappropriation. As a consequence, we anticipate that the JV boards will monitor more when the functional scope is broad given that the complexity of the JV increases under these conditions. Second, whether the JV is established from scratch or is an acquisitive (i.e., Greenfield JV/ Acquisitive JV) is analogous to age given that in reality forming a JV can occur by taking an equity position in an established business or building it up from scratch (Chen, 2008). We develop our hypotheses as two related sets, namely JV size and JV scope (H1 and H2) as well as age and Acquisitive/ Greenfield JV (i.e., H3 and H4).

In order to investigate these characteristics, we rely on corporate governance research as a starting point for investigating this research question. There are two issues with existing findings in this domain that can potentially affect its application to joint ventures. First, the majority of studies primarily focuses on standard corporations and has largely ignored the governance of

other organizational forms. Our study addresses calls for research to study the role and composition of boards beyond standard corporations (e.g., Krause *et al.*, 2013). In particular, we claim that joint ventures have unique sources of complexity and these sources can also affect JV board composition and directors' engagement in monitoring. By studying generic sources of complexity that are applicable to all organizations (e.g., size and age) as well as investigating unique JV sources of complexity (e.g., functional scope and greenfield / acquisitive), we are able to assess the applicability of existing findings of corporate governance research to JVs as well as identify potential domain translation issues. Second, corporate governance scholars have primarily used broad proxies, such as board size and the proportion of outsiders, to capture the monitoring intensity of boards. The downside of using these proxies is that such measures are conflated with other roles that directors undertake, for example bringing-in external resources to the organization (e.g., Hillman and Dalziel, 2003) or advice (Forbes and Milliken, 1999). Given that these proxies are conflated with other roles that directors can fulfil, it remains unclear which antecedents affect the monitoring level by boards especially. There is therefore a need to study the monitoring function of boards in particular (e.g., Tuggle, Sirmon and Reutzel, Bierman, 2010). By comparing results that are obtained from using a direct measure for monitoring with those generated by broad proxies, we are able to generate insights on the usefulness of adopting such proxies, the application of findings in corporate governance research for JVs, as well as address calls to study the relationship between board composition and monitoring in isolation (O' Faleye, Hoitash, Hoitash, 2011).

First, the purpose of this paper is to investigate determinants of board size and the level of monitoring in the joint venture context. On the one hand, we would expect that generic determinants of organizational complexity that have extensively been discussed in corporate

governance research would influence the level of monitoring by JV boards in a similar way as in unitary organizations. Yet, JVs also have unique sources of complexity given the fact that they are established as a subsidiary owned by multiple firms that collaborate under an incomplete contract (Anderson and Dekker, 2005). It is likely that these unique sources of complexity also influence the level of monitoring by boards. Second, a study on the level of monitoring by JV boards with primary data will (a) reveal the applicability of corporate governance theory to joint ventures, (b) explicate unique sources of complexity shaping monitoring by JV boards, (c) provide evidence on the usefulness of employing indirect proxies for monitoring in corporate governance research, and (d) would give significant guidance to practitioners engaged in joint ventures on how to design JV boards or it to be effective in monitoring.

THEORY AND HYPOTHESES

Theoretical Background

Seminal and recent studies on boards of corporations have relied upon the core agency theoretic idea that boards oversight is endogenous to the information needs and monitoring costs (e.g., Fama and Jensen, 1983; Demsetz and Lehn, 1985). Boards are regarded as an information system that shareholders have at their disposal, and information is a commodity that can be acquired at a specific cost (Fama, 1980; Mellahi, 2005; Filatotchev and Nakajima, 2010). The so-called “scope of operations” hypothesis suggests that the complexity that stems from the operations of a particular firm influences the information needs of shareholders (e.g., Coles *et al.*, 2008). Monitoring is a trade-off between the need for such information by shareholders and the cost of monitoring, and this tradeoff is influenced by the firm-specific benefits of increased monitoring as well as the associated costs related to this function. Given that opportunistic behavior is more likely when firms become more complex, monitoring by boards increases under these conditions (Eisenhardt, 1989; Peng *et al.*, 2003). Agency theorists suggest that boards

grow in size in response to the increasing net benefits of monitoring by board members as determined by the scope of a firm's operations (Gilland, *et al.*, 2011). The fact that firms vary in complexity implies that the level of monitoring is likely to be higher for those organizations where information needs are higher, making monitoring more important for some type of firms than for others (Hermalin and Weisbach, 1988; Boone *et al.*, (2007).

Based upon this core proposition in prior corporate governance research, we are interested in developing and testing a model that helps explain variation in the level of board monitoring across JVs. First just as standard corporations, joint ventures have similar sources of complexity such as their size and age that can determine the size of the board and their engagement in monitoring (cf., Boone *et al.*, 2007). JVs also have unique sources inherent to this particular organizational form that can also affect board composition as well as directors' engagement in monitoring (cf., Oxley and Sampson, 2004; Chen, 2008). Merely applying existing findings in corporate governance research to JVs, whilst not taking into account unique JV sources of complexity that also affect board composition and monitoring, can make it difficult for practitioners to obtain value out their collaborations, because free-riding by other board members or JV partners remains a possibility.

Given that recent empirical research in the corporate governance literature infers directors' monitoring function from findings on indirect proxies such as board size (e.g., Dalton, *et al.*, 1998; Adams *et al.*, 2009), it is valuable to use primary data on JV boards' monitoring and investigate their determinants. More specifically, we suggest that the level of monitoring by JV boards will reflect the potential benefits as well as costs of JV monitoring. As we suggest below in translating these ideas from corporate governance research to the domain of JVs, information needs increase for joint ventures that are more complex, such as when joint ventures are larger or

older. We therefore identify some determinants of monitoring by JV boards that would apply to any organization, including unitary organizations such as corporations (e.g., size and age) (cf. Boone *et al.*, 2007) as well as identify unique characteristics of joint ventures that determine their complexity (e.g., Greenfield operations and functional scope) (cf., Oxley and Sampson, 2004; Chen, 2008). Joint ventures are akin to foreign subsidiaries because a firm could acquire existing assets or build a Greenfield operation in collaboration with a partner. Not only are joint ventures embedded within parent firms' organizations (e.g., Naylor and Lewis, 1997), but the partners need to decide which functional activities will be performed within the collaboration versus the parent organizations. As a consequence, whether the joint venture is built as a new business might matter apart from the age of the business, just as the scope of the collaboration might be as or more consequential than the mere size of the business. Thus, we not only wish to examine whether characteristics that apply to corporations and joint ventures alike determine monitoring by JV boards (e.g., size and age) but whether related concepts that uniquely determine the complexity of their operations also influence monitoring by JV boards of directors. Our paper therefore develops two sets of hypotheses on the generic and specific sources of complexity that together can drive the monitoring levels by JV boards of directors. First, we focus on the size of the JV as a generic source of complexity and the functional scope of the JV as a unique JV characteristics. When JVs have broad scope the need for monitoring increases because of the alleviated concerns of behavioral uncertainty. Second, we focus on the JV's age and whether the JV is acquired or newly established given that collaborations can be formed by parent firms taking an equity position in an existing business or set up the JV from scratch.

Research Hypotheses

Agency theory suggests that as the complexity of any business organization grows, the information needs of its board members increase in order for directors to ratify and monitor important decisions by senior managers (e.g., Fama and Jensen, 1983). Corporate governance studies have suggested that larger firms have larger boards because the board is engaged in a higher level of monitoring as well as monitoring a more diverse set of activities compared to small firms (i.e. monitoring operations in different product and geographic markets, monitoring more sophisticated financial and marketing operations, and so forth) (Baysinger and Hoskisson, 1990; Linck, *et al.*, 2008). Due to the volume and greater diversity of these activities, large firms have a higher demand for information than small firms, including information about product markets, foreign markets, technology, and labor relations (Lehn *et al.* 2005). As such, the net benefits for monitoring by directors is positive given the increased information needs that are a result of the larger scope and complexity of a firm's operations (Gilland, Hartzell and Starks, 2011).

While in general boards in larger organizations engage in more monitoring, joint ventures possess some unique features that influence the level of monitoring under these circumstances as well (e.g., Glaister and Buckley, 1997). First, the JV's workforce is comprised of employees from the separate parent organizations, so boards can be useful in monitoring their work and required knowledge transfers (e.g., Balakrishnan and Koza, 1993). In addition, the employees' familiarity with different policies, procedures, and systems in the parent organizations implies that board oversight can be useful in monitoring operations and making adjustments as needed (Pisano, 1989). This implies that when joint ventures grow larger in size, so does the level of monitoring the workforce in these collaborations because it becomes more complex. Given that shirking and other moral hazards might also rise when slack human resources are allocated to the

venture as well as the fact that employees from the partners come in and out of positions (e.g., Hennart, 1993) suggest that information needs will tend to increase with the size of joint ventures (Glaister, 1995; Buckley *et al.*, 2002; Glaister *et al.*, 2003). We therefore begin with standard and straightforward prediction of recent corporate governance research that the level of board monitoring will increase with the size of the organization (Coles *et al.*, 2008):

Hypothesis 1: The larger the size of the JV, the greater the monitoring by the JV's board.

While our first hypothesis is relevant for any organizational form, joint ventures also possess unique sources of complexity. The level of monitoring of boards are influenced by these conditions as well. The baseline argument is that when JVs become more complex, the chance of opportunism by partners increases (e.g., Oxley, 1997) and this influences the information needs as well as the level of monitoring by JV boards. This argument is rooted in the fact that JVs are hybrid organizations involving two or more partners with their own strategic objectives (e.g., Yan and Child, 2002) that collaborate under an incomplete contract (e.g., Anderson and Dekker, 2004) and it can become easier or more interesting for partners to engage in moral hazard under particular conditions (e.g., Reuer *et al.*, 2014). Boards as an ex post governance mechanism are useful in detecting moral hazard and it is likely that they increase their level of monitoring when such threats arise.

One source of complexity that has received scholarly attention in the JV governance literature is the functional scope of joint ventures (e.g., Oxley and Sampson, 2004). Scope influences the complexity of JV operations and therefore the level of monitoring by the board. Some JVs are quite focused, carrying out a single activity or a small set of value chain activities (e.g., in production or distribution) and parent firms will perform other vertical activities on an independent basis as a customer or supplier to the venture. In joint ventures such as these, it is

easier to write a contract during the formation of the JV covering the relevant duties and contingencies that can affect the collaboration. In other joint ventures, the organization will have a broader scope and can even perform the full complement of value chain activities itself (e.g., Hladik, 1985). The functional scope of joint ventures influence opportunities for opportunism (i.e., knowledge misappropriation) and these can be greater in broad scope, more complex alliances compared to narrower ventures due to the multiple points of contact between the parent firms (Oxley and Sampson, 2004). As the number of points of contact increases, firms are more apt to lose control over the information flows between them (Oxley, 1997) and this implies that JV boards in broad scope JVs have higher information needs. In addition, inseparability also can exist across functional activities and the operational routines that support them, so knowledge gained in one functional area (e.g., manufacturing or marketing) of the joint venture can increase unintended knowledge spillovers in another area (e.g., R&D) (e.g., Li, Eden, Hitt, and Ireland, 2008). Prior theoretical work on joint ventures suggests that the board is able to monitor intended and unintended knowledge transfers such as these and take remedial actions (Reuer *et al.*, 2014).

Partners might address such problems in several ways that are not mutually exclusive, and monitoring by the board can be an important means of governing broad scope alliances. For instance, firms might incorporate contractual safeguards into their alliance agreements, but alliance contracts are inevitably incomplete and serious limitations exist regarding verifiability and enforcement by courts (e.g., Hagedoorn and Hesen, 2007). Particularly in broad scope alliances, contractual incompleteness is a problem since partners face challenges in specifying their duties and rights *ex ante* (Borys and Jemison, 1989), so they re-evaluate efficiency and fairness conditions and make adjustments over time to their contributions and distribution rules

(e.g., Ariño and de la Torre, 1998). Oversight by the board of directors can be helpful to address gaps in contracts as it provides an additional means of coping with the complexities presented by broad scope alliances. For example, a larger board can engage in more monitoring of partner firms' inputs and activities, provide more access to financial information on the joint venture, and better facilitate adjustments as needed (e.g., Geringer and Hebert, 1989). We therefore posit:

Hypothesis 2: The broader the scope of the JV, the greater the monitoring by the JV's board.

While the scope of operations hypothesis predicts that the information needs by a board of directors increase when the size or scope of the JV expands, the need for monitoring is also likely to increase when an organization survives over time (e.g., Linck *et al.*, 2008). Boards are differently engaged in the level of monitoring in an entrepreneurial firm than in a more established or mature corporation (Zahra and Pearce, 1989), because there is an increased need for more specialized knowledge by the board to make informed decisions when firms grow older (e.g., Boone, *et al.*, 2007). For instance, Bhagat and Black (2000) argue that over time conventional organizations appoint extra independent directors to monitor the increase in conflicts between managers and shareholders over free cash flow that cannot be profitably reinvested in the firm's core business. Empirical studies have shown that these independent directors also engage in more oversight of managers' performance and ratification and monitoring of senior managers' decisions (e.g., Agrawal and Knoeber, 2001).

While the abovementioned arguments apply for any organization that matures, there are some unique complexities for joint ventures that are also likely to influence the information needs by JV boards as well. First, it may take time for major differences in partner firms' strategies and operations to become obvious and over time these differences can lead to potential conflicts (e.g., Doz, 1996). In these situations, monitoring by boards can be helpful because

directors can detect and solve these issues when they occur over time (Ravasi and Zattoni, 2006). Secondly, over time partners collaborating in the joint venture can meet their initial objectives of starting the JV, and there is an increased probability that a partner will behave opportunistically when it has met one of its initial objectives (Hennart, *et al.*, 1998). Under these conditions, partners might be more able to derive economic benefits from the JV to the detriment of another by distorting transfer prices, misappropriating knowledge, or by reducing efforts in an activity which it contributes to the JV (e.g., Pisano, 1989; Hennart, 1993; Glaister, 1995). These problems increase the information needs of the board when JVs grow older as the board can review the joint venture's performance, monitor the implementation of strategies and approve operational policies as well (Ariño and de la Torre, 1998). This leads us to our third hypothesis:

Hypothesis 3: The older the JV, the greater the monitoring by the JV's board.

Finally, subsidiary governance has received less scholarly attention in the corporate governance literature (e.g., Leksell and Lindgren, 1982) as well as in alliance research (Chen, 2008) and opportunities exist to extend the scope of operations hypothesis to this particular organizational form. Joint ventures are partially owned businesses established by two or more partners and are similarly positioned in a parent's network in comparison to wholly owned subsidiaries with their own boards. Greenfield joint ventures involve two or more organizations establishing a brand new business entity, whereas acquisitive joint ventures involve one or more firms taking a partial equity position in a pre-existing business of a partner firm. Despite the amount of research on a firm's decision to pursue a greenfield wholly-owned subsidiary over an acquisition (e.g., Harzing, 2002) or even a joint venture over an acquisition (see Yin and Shanley, 2008 for a review), limited empirical work has investigated the consequences of the greenfield/acquisition tradeoff within the joint venture context in particular (e.g., Chen, 2008).

Moreover, to our knowledge no prior research has investigated the influence of this specific JV characteristic on the governance of joint ventures and we expect that these different types of collaborations have several important consequences for JV governance that will also influence monitoring by boards. For instance, Greenfield joint ventures are expected to involve greater planning and oversight since they are new organizations compared to acquisitive JVs. Because the parent firms are setting up a new business, this implies that resources from both partners need to be brought in, employees and management need to be recruited from the firms or outside, and new routines must be developed (e.g., Meyer and Estrin, 2001). Given that the complexity with Greenfield operations increases so do the information needs of shareholders which increases the level of monitoring by JV boards (e.g., Boone *et al.*, 2007).

By contrast, in the case of acquisitive joint ventures there are pre-existing relations with customers, suppliers and distribution channels in place in the host market (Caves, 1982). Moreover, the business' employees have gained expertise about the local market conditions and have developed specific routines within the established organization (e.g., Chen, 2008). Under these conditions, it will be more efficient to delegate autonomy to management and engage in less extensive oversight of the business (e.g., Anderson and Gatignon, 1986). Since JV managers, and particularly those from the business being acquired, have superior information, they are in a better position to judge the appropriateness of various functional policies and make changes as necessary, so it is more efficient to grant more discretion and autonomy to management rather than rely on heavy monitoring by the JV board. In fact, prior theoretical arguments and findings in the literature on headquarter-subsidary relationships offer similar predictions related to the costs of headquarters becoming involved in developing strategic plans or becoming actively engaged in operational issues for acquired businesses (e.g., Harzing, 2002).

We therefore hypothesize that the involvement of boards will vary across Greenfield and acquisitive joint ventures, as follows:

Hypothesis 4: JV board monitoring will be greater for Greenfield joint ventures than for acquisitive joint ventures.

METHODS

Sample and Data

The data used for this study were derived from a survey of Dutch managers engaged in (international) equity joint ventures that we conducted in 2008. We relied upon two sources to locate potential respondents for the survey. We first used Thomson Financial's Security Data Corporation (SDC) database in order to compile a target population of JVs. These data were then matched with an alumni database of a Dutch university for the sake of convenience and enhanced likelihood of response. Respondents who had at least ten years of work experience were selected, and we inquired whether they either were in a position to participate in a survey on joint venture governance or were able to refer us to an executive in their firm who was directly involved in these deals. In addition, when no alumni were identifiable for these companies, cold calls were made to the executives who were recorded in the SDC database.

Prior to the distribution of the survey, it was pretested with business practitioners and academics to ensure face validity. Specifically, we conducted semi-structured interviews with three senior executives responsible for joint ventures and consulted with four academics engaged in research on alliances, and we made minor modifications to the survey instrument as deemed necessary. Of the 664 surveys mailed, 175 complete responses were received, representing a 26.4 percent response rate. This response rate may be attributed to the steps taken to locate appropriate respondents, the willingness of alumni to participate, the follow-up procedures of

sending emails and making supplemental phone calls, and guarantees of confidentiality and access to the study's findings (e.g., Dillman, 1978). Since we received more than one response from some firms, we wanted to address the possibility that the observations might not be independent in the estimated models. We first randomly chose one observation per firm for inclusion in the sample and obtained results similar to those provided below. In addition, for the models appearing below we estimated robust standard errors by clustering residuals by firm (Greene, 2007). Since we excluded JVs that were established before 1980 to reduce the effects of potential recall bias and because there were four incomplete observations, our final sample consists of 105 JVs. Below we provide results from several analyses to assess the quality of the data.

In the alliance context, it is difficult to collect data on boards of directors in joint ventures given the confidentiality of 'what happens in the boardroom' (e.g., Dalton, *et al.*, 2003), lack of secondary data on such boards (in contrast to corporations), and problems with identifying key informants who are directly responsible for setting up and overseeing joint ventures (Kumar *et al.*, 1993). Given these conditions, the use of key informants offered the most appropriate way to obtain data on board monitoring in JVs and we were able to obtain such information. Moreover, in alliance governance research it is often observed that identifying and obtaining responses from multiple, well-informed respondents is infeasible given turnover of staff and the small size of many collaborations so survey research on alliances often uses single key informants (e.g., Tsang, 2002; White and Lui, 2005; Krishnan, *et al.*, 2006). In assessing the competence of respondents, we followed Kumar *et al.*'s (1993) recommendation that alliance-specific measures of informant competency are to be preferred over company-specific measures. We therefore included several items to construct a profile of each respondent. As an indication of the

competence of the key informants in our sample, 95.3 percent of the respondents had managed or evaluated the JV or had directly taken part in its negotiation.

We performed a number of additional tests to assess the quality of the data. In order to investigate the possibility of non-response bias, we examined possible differences between early and late respondents based on the assumption that late respondents are more similar to non-respondents than early respondents are to non-respondents (e.g., Armstrong and Overton, 1977). Chi-square tests for independence confirmed that the sectoral and temporal distributions of the early and late respondents' JVs were the same (i.e., $\chi^2=7.13$, n.s. and $\chi^2=15.75$, n.s., respectively). In addition, we conducted two-sample t-tests for these classes of respondents for other theoretical variables in the survey discussed below, and these tests did not reject the null hypothesis that these two groups of respondents were the same. Specifically, no significant differences between early and late respondents were found with respect to the key variables JV board size ($t=-0.04$, n.s.), JV board monitoring ($t=-0.81$, n.s.), JV size ($t=-1.30$, n.s.), JV scope ($t=0.32$, n.s.), JV age ($t=-1.31$), and greenfield JV ($\chi^2 = 0.09$, n.s.).

While most of our variables in the models presented below are quasi-objective, we also sought to address the possibility of common methods bias in three different ways (cf., Chang, van Witteloostuijn, and Eden, 2010). First, we changed the order of predictor and outcome variables so that the former appear later in the survey (Podsakoff, *et al.*, 2003). Second, we performed Harman's (1967) one-factor test and did not detect a significant amount of common variance in the data. Specifically, exploratory factor analysis revealed five separate factors using the eigenvalue-greater-than-one criterion, and only 20.7% of the variance in the variables used in the study can be explained by a single factor. Third, we examined common method bias with a general factor covariate technique, which consists of adding the first unrotated factor as a control

in the multiple regression models (Podsakoff *et al.*, 2003). All of these tests indicated that our findings cannot be attributed to common methods bias.

Measures

Dependent variables. We operationalized the monitoring function performed by boards in two ways. First, we followed substantial empirical precedent in investigating the size of the board (e.g., Coles *et al.*, 2008). Some research claims that smaller boards are more cohesive and are therefore able to monitor more effectively, while larger boards encounter social loafing and higher co-ordination costs (Lipton and Lorsch, 1992; Jensen, 1993). As we explain below, we therefore wish to develop a direct measure of board monitoring using primary data in order to test the monitoring performed by boards of different sizes. In order to obtain data on the size of JV boards, we asked respondents to provide us with the number of directors on the joint venture board when the survey was completed (i.e., *JV board size*). Due to the fact that the variable has a lower bound of one and take on integer values only, estimation requires use of a model suitable for discrete dependent variables. Thus, we analyzed Poisson regression models because such models are appropriate and often used for the analysis of count data. However, because Poisson models implicitly assume that the variance of the response equals its mean, we followed Cameron and Trivedi's (1990) procedure for testing for the possibility of overdispersion¹. The test results showed that the variable for JV board size is not overdispersed. However, none of the findings presented below differ across other specifications such as negative binomial or ordinary least squared regression.

¹ We performed two tests for overdispersion (Cameron and Trivedi, 1990). Based on the actual and fitted variables from the Poisson model, two new variables were created: $Z_i = [(Y_i - \mu_i)^2 - Y_i] / \sqrt{2\mu_i}$ and $W_i = g(\mu_i) / (\sqrt{2\mu_i})$, where $g(\mu_i)$ can be specified as either μ_i or μ_i^2 . In the present case, Y_i = the actual number of total directors, and μ_i is the predicted number. The tests involve regressing W_i on Z_i , and a significant t -value permits rejection of the null hypothesis that the variance in the response function Y_i equals its mean. These tests indicated that overdispersion does not exist and that Poisson regression models are the most appropriate way to analyze the data.

While many studies in finance and management have relied upon broad proxies for board monitoring (e.g., board size) due to the lack of secondary information on board members' specific responsibilities (e.g., Daily, Dalton and Canella, 2003), we collected primary data on the monitoring role of JV boards to develop a measure of *JV board monitoring*. Prior work on corporate governance has frequently used the Business Roundtable as a reference for principles of effective corporate governance (e.g. Daily, *et al.*, 2003). To measure monitoring by JV boards, we used five items for monitoring identified by this organization, each measured on a 1-5 scale ranging from 'no extent' to a 'very large extent': (1) Reviewing and monitoring the implementation of strategic plans, (2) approving operating plans, capital expenditures, and budgets, (3) reviewing and approving significant JV actions, (4) overseeing legal and ethical compliance, and (5) monitoring overall JV performance. Factor analysis confirmed that all five items loaded on a single factor (eigenvalue = 3.01) explaining 60.1% of the variance in the data. Convergent validity is also indicated by the significant loadings for all of the individual items (i.e., all items are above 0.72). We also assessed construct reliability by calculating the Cronbach alpha coefficient for the construct, which equals 0.83 and is therefore well above the threshold level of 0.70 (Nunnally, 1978).

Independent variables. The first measure we used to test the "scope of operations" hypothesis in corporate governance research in the context of joint ventures is the size of the JV (i.e., H1). In line with prior work in corporate governance, complexity associated with the size of the venture is expected to lead boards to undertaking more monitoring (Fama and Jensen, 1983). The variable was measured based upon the number of employees working in the JV. Respondents were asked to indicate how many employees were working in the JV, and we

addressed the significant positive skewness that was evident for this measure by using a logarithmic transformation (e.g., *JV size*).

The second variable we used to reflect the level of monitoring by the JV board and address its complexity is the scope of the joint venture (i.e., H2). Following recent alliance literature adopting a vertical, or functional, definition of the scope of collaborative agreements (e.g., Kalaighnam, *et al.*, 2007; Li *et al.*, 2012), we asked respondents to indicate which of the following functions the JV comprises: basic research, new product or process development, testing and obtaining regulatory approval, manufacturing, marketing, sales, and distribution. We then measured the scope of the JV as the number of these functional activities encompassed by the JV (i.e., *JV scope*).

The third measure we used to investigate how the monitoring function of joint venture boards might be driven by the complexity of a JV's operation is the age of the joint venture (e.g., Lehn *et al.*, 2005) (i.e., H3). In line with work in corporate governance, a firm's age might indicate that boards grow in response to the increasing benefits of monitoring and specialization by board members that accompany the increasing complexity of an organization as it matures (Boone *et al.*, 2007). JV age was measured as the log of the number of years the JV was active at the time the survey was administered or, in the case of terminated ventures, the log of the duration of the collaborative agreement (i.e., *JV age*).

Our fourth variable measures whether the IJV was acquired or newly established (i.e. H4). We predict that acquisitive IJV boards monitor less due to the presence of a local management team, established routines and links with external parties (Caves, 1982; Chen, 2008) while the opposite is true for Greenfields IJVs in which boards must verify the parents' claims about the invested resources (e.g., Harzing, 2002). We constructed a dummy variable that

equals to zero in case of an acquisitive IJV, and equals to one otherwise (*i.e. Greenfield IJV*). We asked respondents to indicate whether the joint venture was established by acquiring an existing firm or by establishing a new venture.

Control variables. In order to account for other variables that might be related to the monitoring function of JV boards as well as the aforementioned regressors, we incorporated several control variables into the models. First, in those models in which we use the subjective scale for JV board monitoring we included board size and the quadratic term for board size as controls. We relied on existing empirical research that investigates the size of the board and its engagement in monitoring (*e.g., Coles et al., 2008*). Our control for board size was used in order to validate the theoretical argument that larger boards encounter social loafing and encounter higher co-ordination costs (Lipton and Lorsch, 1992) whereas smaller boards are more cohesive and are therefore able to monitor more effectively, while larger boards (*i.e., JV board size*). We also used the quadratic term of board size to test the inverted effect of board size on the level of monitoring given that existing research has shown that the effectiveness of boards decreases when they expand after a certain threshold (Jensen, 1993; Yermack, 1996) (*i.e., JV board size²*). Second, we included two variables to capture alternative means by which firms govern their joint ventures. We relied on Luo's (2002) measure of term specificity to address the degree the contract specified relevant terms and clauses concerning (1) how the joint venture will be set up, (2) how the JV will be managed and operated, (3) how partners will cooperate and resolve conflicts, and (4) how the partners will handle termination (*i.e., Term specificity*). The Cronbach alpha coefficient for this construct is 0.87. We also included a variable indicating whether or not the firms had prior alliances together (*i.e., Prior ties*), since relational governance might influence the use of formal governance mechanisms such as contractual safeguards and boards

(e.g., Gulati, 1995). Third, we included two variables that might create free-riding or opportunism within the board. We included a single measure for small numbers to capture unfavorable exchange conditions that might lead to more oversight by the board due to increased concerns of opportunism by the partners. (e.g., Parmigiani, 2007). Specifically, we asked respondents to indicate on a four-point scale the number of companies with the necessary skills who would be willing to collaborate if the focal venture were to be discontinued (i.e., none, one or two, three to ten, more than ten; *Small numbers*). We also controlled for the number of partners in the JV due to the inefficiencies in decision making that can result when the number of principals is larger (i.e., *Number of partners*) (Li *et al.*, 2012). Finally, we controlled for the environmental conditions surrounding the joint venture in several ways. Following Gulati (1995), we incorporated a dummy variable for international joint ventures to capture the different monitoring needs and costs of collaborations in different host countries compared to domestic collaborations (i.e., *International joint venture*). We also controlled for environmental uncertainty, because when uncertainty is significant, it becomes more difficult for directors to make performance attributions and timely decisions (Fama and Jensen, 1983; Ellstrand, Tihanyi, and Johnson, 2002; Boone *et al.*, 2007). Respondents were asked to indicate the degree to which the following five external factors were predictable, using five-point Likert-type items ranging from ‘not at all predictable’ to ‘accurately predictable’ (Kumar and Seth, 1998): (1) government policies and regulations, (2) customer demand, (3) supply of raw materials and equipment, (4) competitive climate, and (5) technological trends. In order to develop individual items for environmental uncertainty we reverse coded the scores (i.e., u_i , $i=1$ to 5). Because different aspects of environmental uncertainty might affect specific JVs differently, we weighted these items by asking participants to allocate 100 points among these five factors based on their

importance in determining the ultimate success of the joint venture (i.e., w_i , $i=1$ to 5). The measure of *Environmental uncertainty* was then calculated by combining the weights and individual uncertainty scores as follows:

$$(3) \text{ Environmental uncertainty} = \frac{1}{100} \sum_{i=1}^5 w_i u_i$$

Finally, controlled for *sector fixed effects* as the industry in which a JV operates might influence the board's information needs or cost of monitoring.

RESULTS

Table 1 presents additional descriptive statistics and a correlation matrix of the variables used in the analyses. The average size and age of the sampled joint ventures is 748 employees and 6.8 years respectively. Thirty-five percent of the collaborations involved three or more partners and 28 percent of the parent firms had formed collaborations in the last five years prior to the establishment of the focal joint venture. In addition, international joint ventures were larger in size ($p<0.01$), broader in scope ($p<0.05$), older ($p<0.10$), acquisitive in nature ($p<0.05$), more contractually complex ($p<0.05$) and had fewer partners ($p<0.01$). All of the correlations are below 0.32, and the maximum VIF of 1.81 for the variables also indicates that multicollinearity is not a concern.

*** *Insert Table 1 here* ***

Table 2 reports the results of the regression analyses of the determinants of JV board size as well as of JV board monitoring. Models I and II present the results of our theoretical and control variables on our indirect measure of monitoring, namely JV board size. Models III through VIII present the results of the independent variables on our direct measure of JV board monitoring. Model I and III are baseline specifications comprising all of the control variables, and Model II as well as IV – VIII add the theoretical variables for testing the four hypotheses

developed earlier. The results show that Models I and III are statistically significant (both $p < 0.001$) and the theoretical variables are jointly significant in Models II and VIII compared to the baseline specifications shown in Model I and III (all $p < 0.001$).

*** *Insert Table 2 here* ***

Our four hypotheses drew upon the “scope of operations” hypothesis in prior corporate governance research in order to predict that monitoring by the JV’s board will be more extensive for those joint ventures that are larger, broader functional scope, older or were Greenfield joint ventures. The coefficient estimate for JV size is positive and significant for JV board size ($p < 0.05$), but insignificant for JV board monitoring, lending only partial support for H1. Consistent with H2, we see that joint ventures with a broader functional scope receive greater monitoring by the board ($p < 0.05$), but their boards need not be larger. Older joint ventures are subject to greater monitoring by the board ($p < 0.05$), but older joint ventures do not necessarily have larger boards (i.e., H3). In contrast to H4, the coefficient estimate for Greenfield joint ventures is negative and significant ($p < 0.05$) rejecting our fourth hypothesis nor do these types of ventures have larger boards.

Thus, several patterns emerge that are noteworthy for the theoretical variables. First, some determinants of joint venture monitoring by boards are only evident when we use the direct measure of joint venture board monitoring, and such effects are masked by using the size of the board as a proxy for monitoring. Second, whereas some aspects of organizational complexity that lead to larger boards also apply to joint ventures (e.g., size of the business), it does not necessarily follow that these sources of complexity lead to greater monitoring. Third, there are unique aspects of joint ventures (e.g., functional scope) that contribute to greater monitoring by their boards. Fourth, whereas it was predicted that Greenfield joint ventures require more

monitoring by JV boards given the increased complexity compared to acquisitive JVs, we find an opposite effect. Finally, the fact that joint venture size has a positive effect on the size of the board but not its monitoring may reflect the fact that directors engage in activities other than monitoring (e.g., providing advice and resources), and the fact that some determinants of joint venture monitoring do not relate to joint venture board size (e.g., age and scope) may reflect a more complex relationship between board size and monitoring than considered in previous empirical corporate governance research.

Robustness analyses and convergent validity

We performed several analyses to obtain confirmation about the robustness of our results. First, we analyzed robustness of our findings given that our observations were collected in different legal contexts, the fact that we approached Dutch managers, as well that 67% of our responses were JV established by at least one foreign partner. While JVs are private legal entities and therefore do not have to adhere to the exact legal requirements of stock-listed corporations across countries (e.g., CEO duality, percentage of outsiders on boards) (Hewitt, 2005), we still decided to pursue three different tests to ascertain robustness of findings. We included a dummy variable for Dutch or Non-Dutch firms in order to identify whether our results were robust and significant differences between national and international deals occurred. We also developed a measure whether the JV (or any of the partners) was located in an Anglo-Saxon legal regime. Finally, we developed measures for different legal families and incorporated them as control variables in our models (i.e., 1) French legal family; 2) German legal family; 3) Anglo-American legal family; 4) Nordic legal family and 5) other legal families. For all these three separate tests, the interpretations of results remained the same. Second, given the cross sectional nature of our data we developed alternative ways to capture heterogeneity across joint ventures. We created a

dummy variable for those countries that had more than 4 JVs located in them. We also performed similar tests for countries with two or three joint ventures. The results were robust to this alternative treatment of inter-industry heterogeneity. Third, due to the fact that the proportion of outsiders has also served as a suitable proxy (e.g., Rosenstein and Wyatt, 1990; Byrd and Hickman, 1992; Coles and Hesterly, 2000) besides board size (e.g., Boone *et al.*, 2007; Linck, *et al.*, 2007) we decided to run regressions with the proportion of outsiders on boards as a dependent variable. Results were generally in line with the measure for board size and were largely inconclusive.²

Given the subjective nature of our primary measure for monitoring, we assessed convergent validity in three ways, namely by assessing the correlation among items which make up the scale measuring a construct (internal consistency), by the correlation of the given scale with other measures that the scale is supposed to correlate with (criterion validity), and by assessing the scale across different samples (external validity) (Rossi *et al.*, 1983). First, in relation to internal consistency, a) we analyzed the Cronbach alpha for our subjective measure, b) obtained the average variance extracted (AVE), and c) assessed whether all items loaded on a single factor (Fornell and Larcker, 1981)). The Cronbach alpha was above 0.70, the average variance extracted ranges between 0.61 and 0.78 indicating satisfactory convergent validity for all constructs, and all items loaded on a single factor and the lowest factor loading was 0.72. Second, for criterion related validity, we decided to identify other governance solutions that also reduce opportunism besides monitoring. In particular, we used term specificity as a formal governance instrument that reduces opportunism (e.g., Mesquita and Brush, 2008) which was correlated with our primary measure for monitoring and therefore in line with expectations ($r =$

² Results can be obtained by email upon request by contacting the first author.

17; $p < 0.05$). We decided to investigate a second source of governance, relational governance, given its reducing effect on opportunism as well (i.e., prior ties) (e.g., Gulati, 1995). We did not find a significant correlation between prior ties and our measure for monitoring. One possible explanation of this non-finding is that prior ties as a measure conflates trust (as a mechanism to reduce opportunism) with routines (e.g., Poppo, Zhou and Zenger, 2008). As a result, we decided to explore this matter further and relied on Poppo and Zenger's (2002) instrument as an alternative measure for relational governance. In line with expectations we did find a significant and positive correlation between our measure of monitoring and relational governance ($r = .18$; $p < 0.05$). Third, in order to examine external validity, we relied on the fact that our sample includes firms participating in the Netherlands as well as other countries. This allowed us to compare the measurement model for all our constructs across these different groups. Specifically, we compared the measurement models of the two groups with the nonparametric approach based on permutation resampling recommended by Chin (2003), and we did not find significant differences. Finally, we also performed such multi-group comparisons for the entire model, and again we did not detect any significant differences.

DISCUSSION AND CONCLUSION

Contributions and Implications

Despite the fact that the joint venture literature has long acknowledged the importance of boards and their engagement in monitoring of collaborative agreements (e.g., Killing, 1983; Schaan, 1983; Harrigan, 1985), only recently few studies start to look at boards as a key governance mechanism for joint ventures (e.g., Reuer *et al.*, 2014). While prior studies have often addressed the importance of joint venture boards within theories of alliances (e.g., Pisano, 1989; Balakrishnan and Koza, 1993), it is also the case that the extensive empirical literatures on

corporate governance and joint ventures have largely developed independently from one another to date. Thus, one of our main objectives and contributions is to build some initial bridges between them as well as call for research on this neglected topic in the alliance governance literature.

Joint ventures are private legal entities that are run separately from their parent organizations, but remain partially owned subsidiaries by their JV parents. Firms have considerable discretion as to how JV boards are set up and operated as they don't need to comply with the same regulations applicable for publicly traded corporations (Hewitt, 2005). It also means that financial figures are often consolidated in the annual statements of the parent firms. Moreover, it implies that it is the parents' boards of directors that are ultimately responsible for the activities of their joint ventures, irrespective in which country the JV is established. As a result, we decided to investigate an interesting puzzle that emerges in relation to monitoring by a JV board, because the parent firms themselves can decide how much discretion they should delegate to the board of joint ventures (cf. Shleifer and Vishny, 1997) or the extent that they should oversee the JV themselves or grant more autonomy to local management.

We extend prior corporate governance research that has considered board members' roles in unitary corporations (e.g., Adams, *et al.*, 2009) as well as in subsidiaries (e.g., Leksell and Lindgren, 1982; Kriger, 1988) by investigating board monitoring in joint ventures in particular and by using primary data. In so doing, our paper responds to calls for research that advances beyond conceptual treatments of directors' roles (e.g., Daily, *et al.*, 2003). While recent empirical research in the corporate governance literature infers monitoring by directors from findings on indirect proxies such as board size or composition (e.g., Coles, *et al.*, 2008; Adams *et al.*, 200), we extend these studies by demonstrating that some determinants of the extent of

monitoring are only evident when a direct measure is used. Our findings imply that certain effects are masked by using the size of the board as a proxy for monitoring, and the evidence demonstrates the value of primary measures on the roles of boards. Future research on other organizational forms could also benefit from the rich insights that primary data offer in order to investigate the black-box of what boards actually do (Daily, 1996).

Our results also suggest the need for more detailed investigations into the governance design of subsidiaries. While prior research on JV governance has largely ignored the subtleties in governance such as the acquisitive or Greenfield nature of these deals, so has corporate governance theory (e.g., Krause and Semadini, 2013). Our findings reveal the need for more detailed investigation into these unique characteristics and show that governance design is a much more fine-grained process than assumed by alliance and corporate governance scholars to date. The opposite finding that JV boards engage in more monitoring in the case for acquisitive joint ventures seems to confirm this. One possible argument for our contrary finding is that boards in acquisitive joint ventures have a higher need to engage in more control in order to achieve synergetic effects (Bradley *et al.*, 1988). In contrast to Greenfield JVs, in acquisitive deals employees may be reluctant to implement required changes or old routines, beliefs, codes, culture, and knowledge need to be unlearned before new routines are developed (Barkema and Vermeulen, 1998). This increases the information needs by boards making them more engaged in monitoring.

Limitations and Future Research Directions

In addition to investigating the avenues for future research mentioned previously, extensions could also address several specific limitations of this study. Our objective was to investigate the oversight function of JV boards in its own right, but our paper ignores the fact

that directors undertake other roles besides monitoring as well. For instance, a JV board of directors can provide advice (e.g., Forbes and Milliken, 1999) or bring (external) resources to the joint venture (e.g., Hillman and Dalziel, 2003). The unique features of joint ventures that we study in our paper can also influence such functions. It is important to study these roles because advice or bringing in resources can be intertwined with the monitoring function in practice (e.g., Adams et al., 2006). For this reason, there is a need to move beyond the monitoring function in particular in order to generate a more complete understanding of what boards do in the joint venture context.

As a second and related avenue for future research, it is also important to study what unique roles boards of directors of joint ventures undertake in comparison to boards of (stock-listed) corporations. For example, while advice is a responsibility that all directors across all organizational forms fulfill, JV boards of directors might also be engaged in specific roles that are not common across standard boards. For instance, JV boards can be useful in serving as a negotiation platform (Ravasi and Zattoni, 2006), resolving conflict (Pisano, 1989) or transferring knowledge to the partners that appointed them (Balakrishnan and Koza, 1993). It would be interesting to investigate how different sources of complexity influence if (and when) conflicts occur as well as how JV boards are engaged in resolving them.

The abovementioned generic and specific board functions can be undertaken by different directors (i.e., insiders and outsiders). Our current investigation has been of the monitoring of the JV by the board as a whole, so opportunities exist to investigate roles that particular types of directors in joint ventures fulfill. For instance, research in corporate governance has focused on the roles of insiders or outside directors (Baysinger and Hoskisson, 1990, Boone *et al.*, 2007, Duchin, Matsusaka, and Ozbas, 2010) as well the dual role of the CEO on the board (Westphal

and Zajac, 1995; Dalton and Dalton, 2011). These topics might also be examined in the joint venture context and would provide valuable insights in the governance of such collaborations.

While our focus has been on the JV board as a governance mechanism, it would be valuable to consider alternative governance mechanisms for these types of collaborative agreements as well. More specifically, we have incorporated controls for formal and relational governance mechanisms that parent firms use, but there are other governance mechanisms that parent firms as well as joint ventures have at their disposal that might substitute or complement oversight by the joint venture board. For example, at the parent firm level, a partner might engage in behavioral monitoring of the collaboration separately from the JV board or use other mechanisms for oversight (e.g., staff rotation, IT systems, etc.) (Kumar and Seth, 1998). At the joint venture level, it would also be valuable to consider other facets of governance practices beyond boards of directors (e.g., management compensation, performance systems, etc.).

In addition, given that our focus has been on the antecedents of board monitoring and board size in JVs, it would be valuable for future research to investigate the performance implications of board oversight. Firms enter into joint ventures for many different reasons, such as penetrating new markets, accessing other firms' resources and capabilities, obtaining scale economies, coping with uncertainty, increasing market power, and so forth (e.g., Contractor and Lorange, 1988; Dussauge, Garrette, and Mitchell, 2004; Yin and Shanley, 2008), so it would be valuable to examine how JV boards potentially have an impact on these specific outcomes. It would also be interesting to consider how governance by joint venture boards also has consequences for more intermediate outcomes such as the development of trust or learning as the JV evolves (e.g., Ariño and de la Torre, 1998). Such research could be useful in responding to

calls for research on the relationships between alliance structures and processes (e.g., Bell *et al.*, 2006; Ariño and Ring, 2010).

Our paper also ignores a large stream in corporate governance research that focuses on conditions when directors are motivated to undertake their monitoring responsibilities. This stream of research argues that directors might (or might not) be more engaged in monitoring given the personal relationships they have with the CEO or the fact that the CEO can have an effect on an individual director's career progression (Westphal and Zajac, 1995). Given that directors are appointed by the parent firms and that their career prospects are independent of their relationship with the CEO in joint ventures, it would be interesting to identify how such factors influence director motivation in alliances.

Finally, monitoring by directors can differ over time. Opportunities exist to develop a panel data set by collecting longitudinal data in order to reduce potential selection issues and sources of unobserved heterogeneity in a cross-sectional study such as ours. Corporate governance research has extensively discussed endogeneity concerns on corporate boards, in particular when studying performance consequences of corporate boards (Hermalin and Weishback, 1998; Wintoki, *et al.*, (2012). We call on future research could pursue such data collection efforts in their attempt to study the monitoring by JV boards.

Managerial relevance

Despite the fact that joint ventures serve as an important strategic tool in order to achieve organizational goals (Bamford and Ernst, 2005), research on the board of directors of JVs and in particular their monitoring function remains largely ignored. Previously, practitioners responsible for designing boards and allocating responsibilities to directors had to rely on

existing findings in corporate governance research. The current governance literature primarily adopts a corporate focus by studying unitary organizations and largely ignores governance requirements of other organizational forms. Our paper shows that the various organizational forms require more subtle governance designs that are tailored to the unique characteristics inherent to the type of organization. In the case of JVs, collaborations have intrinsic characteristics and these features influence the monitoring levels of JV boards as well. Our finding implies that practitioners who are responsible for designing JV governance and allocating monitoring rights should treat the corporate governance literature with care and simply relying on findings in from (practical) corporate governance research can lead to inaccurate decisions. While we only identify conditions when boards are engaged in monitoring, as well as situations when boards might sensibly engage in less monitoring, it is feasible that other functions that directors undertake are also influenced by specific characteristics inherent to a particular organizational form.

While corporate governance research provides a rather incomplete source for practitioners in designing boards of joint ventures, the alliance literature also provides few insights for allocating monitoring responsibilities to JV boards. A dominant research avenue within the alliance literature is the governance of collaborations, but this stream of literature has tended to focus on the governance mechanisms put in place at the outset of the collaboration (e.g., various contractual safeguards; administrative controls and incentives), or has primarily focused on contract design. As a consequence, monitoring by the board has been understudied in current alliance research and the literature has not paid sufficient attention to the actual implementation and usage of governance mechanisms. Our paper shows that bringing these two literatures

together is essential for a more complete understanding on the design of boards and the allocation of their responsibilities.

The two unique JV sources of complexity that we bring forward (i.e., JV functional scope and whether the JV was acquired or not) are analogous to two existing antecedents for board monitoring in corporations (i.e., firm size and age). Unfortunately, all the determinants that we used can be attributed to the joint venture itself. It is therefore important for practitioners to understand that there might be ‘other levels of analyses’ that also affect the monitoring by boards of directors. For instance, JV parents’ characteristics can differ. They can originate from various countries and are accustomed to different legal institutions. As a consequence, they might experience cultural differences between them or have difficulties to go to court when a conflict between them escalates. This affects board involvement and the design of other governance as well (e.g., Reuer et al., 2014; Devarakonda, et al., 2017). At the same time, JV parents can be similar. For instance, they can compete in common end markets. Their competitive overlap can also require boards to be engaged in more monitoring because behavioral uncertainty tends to increase under these conditions. While such a study falls beyond the scope of our paper, it is important for practitioners to understand that there are other unique sources of complexity that can also affect the monitoring role by JV boards. In conclusion, while our paper provides important insights for monitoring by JV boards, the effects of the international context can result in more (or less) monitoring as well.

Just as JVs have unique characteristics compared to standard organizations, so do JV boards fulfil unique roles in relation to those of corporations. The board of directors fulfil a gap filling role in alliance contracts (Williamson, 1985) and are often responsible for resolving conflicts when they escalate (Ravasi and Zattoni, 2006). In the JV literature the two unique

sources of complexity that we investigate (i.e., JV scope and Greenfield/ acquisitive JVs) can potentially create conflicts between partners as well. It is therefore important for practitioners to understand when and how boards of directors are engaged in conflict escalation and how such responsibilities are coupled with monitoring. For instance, Adams et al., (2006) argues that monitoring and advice are often intertwined with one another, but the same is true for monitoring, advice and resolving conflicts. While our findings suggest that boards monitor more when behavioral uncertainty increases, it remains unclear if directors also undertake conflict resolution to a great extent under these same conditions. We call for future research to study unique JV antecedents on advice and other roles, but at the same time how these responsibilities are intertwined with monitoring.

REFERENCES

- Adams, R.B., Hermalin, B.E., & Weisbach, M.S. 2009. *The role of boards of directors in corporate governance: A conceptual framework and survey*. Unpublished manuscript.
- Agrawal, A., & Knoeber, C. R. 2001. Do some outside directors play a political role. *Journal of Law and Economics*, 44: 179-198.
- Anderson, E., & Gatignon, H. 1986. Modes of Foreign Entry: A Transaction Cost Analysis and Propositions. *Journal of International Business Studies*, 17(3): 1-26.
- Anderson S.W., & Dekker H.C. 2005. Management control for market transactions: The relation between transaction characteristics, incomplete contract design and subsequent performance. *Management Science*, 51(12): 1734-1752.
- Ariño, A., & de la Torre, J. 1998. Learning from failure: Towards an evolutionary model of collaborative ventures. *Organization Science*, 9: 306-325.
- Ariño, A., & Ring, P.S. 2010. The role of fairness in alliance formation. *Strategic Management Journal*, 31(10): 1054-1087.
- Armstrong, J.S., & Overton, T.S. 1977. Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, 14: 396-403.
- Balakrishnan, S., & Koza, M.P. 1993. Information asymmetry, adverse selection, and joint ventures. *Journal of Economic Behavior and Organization*, 20: 99-117.
- Bamford, J., & Ernst, D. 2005. Governing joint ventures. *McKinsey Quarterly*. Spring, 63-69.
- Bamford, J., Ernst, D., & Fubini, D.G. 2004. Launching a world-class joint venture. *Harvard Business Review*, 82: 91-100.
- Barkema, H.G. & Vermeulen, F. International expansion through start-up or acquisition: A learning perspective. *Academy of Management Journal*, 41(1): 7-26.
- Baysinger, B., & Hoskisson, R.E. 1990. The composition of directors and strategic control: Effects on corporate strategy. *Academy of Management Review*, 15: 72-87.
- Beamish, P.W., Inkpen, A.C. 1995. Keeping international joint ventures stable and profitable. *Long Range Planning*, 28(3): 26-36.
- Bell, J., den Ouden, B., & Ziggers, G. 2006. Dynamics of cooperation: at the brink of irrelevance. *Journal of Management Studies*, 43: 1607-1619.
- Bhagat, S., & Black, B. 2000. Board independence and long-term firm performance. *Unpublished paper*, University of Colorado.
- Boone, A.L., Field, L. C., Karpoff, J.M., & Raheja, C.G. 2007. The determinants of corporate board size and composition: An empirical analysis. *Journal of Financial Economics*, 85 : 66-101.
- Borokhovich, K. A., Parrino, R., & Trapani, T. 1996. Outside directors and CEO selection. *Journal of Financial and Quantitative Analysis*, 31(3): 337-355.
- Borys, B., & Jemison, D. B. 1989. Hybrid arrangements as strategic alliances: Theoretical issues in organizational combinations. *Academy of Management Review*, 14(2): 234-249.
- Bradley, M., A. Desai and E. Kim. 1988. Synergistic gains from corporate acquisition and their division between the stockholders of target and acquiring firms. *Journal of Financial Economics*, 17: 3 -40.
- Brickley, J.A., Coles, J.L., & Terry, R.L. 1994. Outside directors and the adoption of poison pills. *Journal of financial Economics*, 35(3): 371-390.
- Buckley, P.J., Glaister, K., Husan, R. International joint ventures: Partnering skills and cross-cultural issues. *Long Range Planning*, 35(2): 113-134.
- Cameron, A.C., & Trivedi, P.K. 1990. Regression-based tests for overdispersion in the Poisson model. *Journal of Econometrics*, 46(3): 347-364.
- Carpenter, M.A., & Westphal, J.D. 2001. The strategic context of external network ties: Examining the impact of director appointments on board involvement in strategic decision making. *Academy of Management Journal*, 44(4): 639-660.
- Caves, R. 1982. *Multinational enterprise and economic analysis*. Cambridge University Press: New York.
- Chen, S-F. 2008. The motives for international acquisitions: Capability procurements, strategic considerations, and the role of ownership structures. *Journal of International Business Studies*, 39: 454-471.
- Coles, J., Lemmon, M., & Mescke, J. 2005. Structural models and endogeneity in corporate finance: The link between managerial ownership and corporate performance. *Working paper*, Arizona State University.
- Coles, J.L., Daniel, N.D., & Naveen, L. 2008. Boards: Does one size fit all? *Journal of Financial Economics*, 87(2): 329-356.
- Contractor, F.J. and Lorange, P.1988. Why should firms cooperate? The strategy and economic basis for cooperative ventures. In: *Cooperative strategies in international business*. Contractor, F. and Lorange, P (eds). Lexington Books, MA: 3-30.
- Daily, C.M. 1996. Governance patterns in bankruptcy reorganizations. *Strategic Management Journal*, 17(5): 355-375.)

- Daily, C.M., Dalton, D.R., & Canella, A.A. 2003. Corporate governance: Decades of dialogue and data. *Academy of Management Review*, 28(3): 371-382.
- Dalton, D.R., Daily, C.M. Ellstrand, A.E., & Johnson, J.L. 1998. Meta-analytic reviews of board composition, leadership structure, and financial performance. *Strategic Management Journal*, 19: 269-290.
- Dalton, D.R., Dalton, C.M. 2011. Integration of micro and macro studies in governance research: CEO duality, board composition and financial performance. *Journal of Management Studies*, 37(2): 404-411.
- Demsetz, H., & Lehn, K. 1985. The structure of corporate ownership: Causes and consequences. *Journal of Political Economy*, 93(6): 1155-1177.
- Dillman, D. 1978. *Mail and Telephone Surveys: The Total Design Method*. Wiley: New York.
- Doz, Y.L. 1996. The evolution of cooperation in strategic alliances: Initial conditions or learning processes?. *Strategic management journal*, 17(S1): 55-83.
- Duchin, R., Matsusaka, J.G., Ozbas, O. 2010. When are outside directors effective? *Journal of Financial Economics*, 96(2): 195-214.
- Dussauge, P., Garrette, B., & Mitchell, W. 2004. Asymmetric performance: the market share impact of scale and link alliances in the global auto industry. *Strategic Management Journal*, 25(7): 701-711.
- Ellstrand, A.E., Tihanyi, L., & Johnson, J.L. 2002. Board structure and international political risk. *Academy of Management Journal*, 45(4): 769-777.
- Fama, E., & Jensen, M. 1983. Separation of ownership and control. *Journal of Law and Economics*, 26(2): 301-325.
- Fama, E.F. 1980. Agency problems and the theory of the firm. *Journal of Political Economy*, 88(2): 288-307.
- Filatotchev, I., Nakajima, C. 2010. Internal and external corporate governance: An interface between organization and its environment. *British Journal of Management*, 21(3): 591-606.
- García-Canal, E., Valdés-Llaneza, A., Ariño, A. 2003. Effectiveness of dyadic and multi-party joint ventures. *Organization Studies*, 24(5): 743-770.
- Geringer, J.M., & Hebert, L. 1989. Control and performance of international joint ventures. *Journal of International Business Studies*, 20(2): 235-254.
- Gibson Dunn, 2012. *Recent trends in joint venture governance*. Client alert January 11, 2012.
- Gillan, S.L., Hartzell, J.C., & Starks, L.T. 2011. Tradeoffs in corporate governance: Evidence from board structures and charter provisions. *The Quarterly Journal of Finance*, 1(4): 667-705.
- Glaister, K.W., Husan, R., & Buckley, P.J. 2004. *Strategic Business Alliances: An Examination of the Core Dimensions*. Cheltenham, UK: Edward Elgar.
- Glaister, K.W., Buckley, P.J. 1997. Task-related and partner-related selection criteria in UK international joint ventures. *British Journal of Management*, 8(3): 199-222.
- Glaister, K.W., Husan, R., Buckley, P.J. 2003. Decision-making autonomy in UK international equity joint ventures. *British Journal of Management*, 14(4): 305-322.
- Glaister, K.W. (1995) Dimensions of control in UK international joint ventures. *British Journal of Management*, 6(2): 77-96.
- Gong, Y., Shenkar, O., Luo, Y., & Nyaw, M.K. 2007. Do multiple parents help or hinder international joint venture performance? The mediating roles of contract completeness and partner cooperation. *Strategic Management Journal*, 28(10): 1021-1034.
- Greene, W. 2007. *Econometric Analysis*. 5th edition. Prentice Hall.
- Gulati, R. 1995. Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal*, 38(1): 85-112.
- Gulati, R., & Singh, H. 1998. The architecture of cooperation: Managing coordination costs and appropriation concerns in strategic alliances. *Administrative Science Quarterly*, 43(4): 781-814.
- Hagedoorn, J., & Heslen, G. 2007. Contract law and the governance of inter-firm technology partnerships: An analysis of different modes of partnering and their contractual implications. *Journal of Management Studies*, 44(3): 342-366.
- Hambrick, D.C., Werder, A., & Zajac, E.J. 2008. New directions in corporate governance research. *Organization Science*, 19(3): 381-385.
- Harman, H.H. 1967. *Modern Factor Analysis*. University of Chicago Press: Chicago, IL.
- Harrigan, K.R. 1985. *Strategies for Joint Ventures*. Lexington, MA: Lexington Books.
- Harzing, A-W. 2002. Acquisitions versus greenfield investments: International strategy and management of entry modes. *Strategic Management Journal*, 23(3): 211-227.
- Hennart, J.F. 1991. Explaining the Swollen Middle: Why Most Transactions Are a Mix of "Market" and "Hierarchy". *Organization Science*, 4: 529 – 547.
- Hennart, J.F. 1993. Explaining the swollen middle: Why most transactions are a mix of “market” and “hierarchy”. *Organization Science*, 4(4): 529-547.

- Hennart, J.F., Kim, D.J., & Zeng, M. 1998. The impact of joint venture status on the longevity of Japanese stakes in US manufacturing affiliates. *Organization Science*, 9(3): 382-395.
- Hermalin, B.E., & Weisbach, M.S. 1988. The determinants of board composition. *The RAND Journal of Economics*, 19(4): 589-606
- Hewitt, I. 2005. *Joint Ventures* (3rd Edition). London, UK: Sweet and Maxwell.
- Hladik, K.J. 1985. *International Joint Ventures: An Economic Analysis of U.S.-Foreign Business Partnerships*. Lexington, MA: Lexington Books.
- Ireland, R.D., Hitt, M.A., & Vaidyanath, D. 2002. Alliance management as a source of competitive advantage. *Journal of Management*, 28(3): 413-446.
- Jensen, M.C. 1993. The modern industrial revolution, exist, and the failure of internal control systems. *The Journal of Finance*, 48(3): 831- 880.
- Johnson, J.L., Daily, C.M., & Ellstrand, A. E. 1996. Boards of directors: A review and research agenda. *Journal of Management*, 22(3): 409-438.
- Kalaiganam, K., Shankar, V., & Varadarajan, R. 2007. Asymmetric new product development alliances: Win-win or win-lost partnerships? *Management Science*, 53(3): 357-374.
- Kale, P., & Singh, H. 2007. Building firm capabilities through learning: The role of the alliance learning process in alliance capability and firm-level alliance success. *Strategic Management Journal*, 28(10): 981-1000.
- Killing, J. 1983. *Strategies for Joint Venture Success*. New York, NY: Praeger.
- Krause, R., & Semadini, M. 2013. Apprentice, departure, and demotion: An examination of the three types of CEO–board chair separation. *Academy of Management Journal*, 56: 805-826.
- Kruger, M.P. 1988. The increasing role of subsidiary boards in MNCs: An empirical study. *Strategic Management Journal*, 9(4): 347-360.
- Krishnan, R., Martin, X., & Noorderhaven, N. 2006. When does trust matter to alliance performance? *Academy of Management Journal*, 49(5): 894-917.
- Kumar, S., & Seth, A. 1998. The design of coordination and control mechanisms for management joint venture-parent relationships. *Strategic Management Journal*, 19(6): 579-599.
- Kumar, N., Stern, L.W., & Anderson, J.C. 1993. Conducting interorganizational research using key informants. *Academy of Management Journal*, 36(6): 1633-1651.
- Lavie, D., Lechner, C., & Singh, H. 2007. The performance implications of timing of entry and involvement in multipartner alliances. *Academy of Management Journal*, 50(3): 578-604.
- Lehn, K., Patro, S., Zhao, M., 2005. Determinants of the size and structure of corporate boards: 1935–2000. *Working Paper*. University of Pittsburgh.
- Leksell, L., & Lindgren, U. 1982. The board of directors in foreign subsidiaries. *Journal of International Business Studies*, 13(1): 27-38.
- Li, D., Eden, L., Hitt, M.A., & Ireland, R.D. 2008. Friends, acquaintances, or strangers? Partner selection in R&D alliances. *Academy of Management Journal*, 51(2): 315-334.
- Li, D., Eden, L., Hitt, M.A., Ireland, R.D., & Garrett, R.P. 2012. Governance in multilateral R&D alliances. *Organization Science*, 23(4): 1191-1210.
- Linck, J.S., Netter, J.M., & Yang, T. 2008. The determinants of board structure. *Journal of Financial Economics*, 87(2): 308-328.
- Lipton, M., & Lorsch, J.W. 1992. A modest proposal for improved corporate governance. *The Business Lawyer*, 48(1): 59-77.
- Luo, Y. 2002. Contract, cooperation, and performance in international joint ventures. *Strategic Management Journal*, 23(10): 903-919.
- Luo, Y. 2005. Corporate governance and accountability in multinational enterprises: concepts and agenda, *Journal of International Management*, 11(1):1-18.
- Mayers, D., Shivdasani, A., & Smith Jr, C.W. 1997. Board composition and corporate control: Evidence from the insurance industry. *Journal of Business*, 70(1): 33-62.
- Mellahi, K. 2005. The dynamics of boards of directors in failing organizations. *Long Range Planning*, 38(3): 261-279.
- Meyer, K.E., & Estrin, S. 2001. Brownfield entry in emerging markets. *Journal of International Business Studies*, 32(3): 257-267.
- Naylor, J., Lewis, M. 1997. International alliances: Using joint ventures in a diversified company. *Long Range Planning*, 30(5): 678-688.
- Nunnally, J.C. 1978. *Psychometric Theory* (Second Edition). McGraw-Hill: New York, NY.
- Osborn, R.N., & Baughn, C.C. 1990. Forms of interorganizational governance for multinational alliances. *Academy of Management Journal*, 33(3): 503-519.

- Oxley, J.E., & Sampson, R.C. 2004. The scope and governance of international R&D alliances. *Strategic Management Journal*, 25(8/9): 723-749.
- Oxley, J.E. 1997. Appropriability hazards and governance in strategic alliances: A transaction cost approach. *Journal of Law, Economics, and Organization*, 13(2): 387-409.
- Parkhe, A. 1993. Strategic alliance structuring: A game theoretic and transaction cost examination of interfirm cooperation. *Academy of Management Journal*, 36: 794-829.
- Parmigiani, A. 2007. Why do firms both make and buy? An investigation of concurrent sourcing. *Strategic Management Journal*, 28(3): 285-311.
- Pisano, G. P. 1989. Using equity participation to support exchange: Evidence from the biotechnology industry. *Journal of Law, Economics, and Organization*, 5(1): 109-126.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.-Y., & Podsakoff, N.P. 2003. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5): 879-903.
- Puranam, P. & Vanneste, B. S. 2009. Trust and governance: Untangling a tangled web. *Academy of Management Review*, 34(1): 11-31.
- Raheja, C.G. 2005. Determinants of board size and composition. A theory of corporate boards. *Journal of Financial and Quantitative Analysis*, 40: 283-306.
- Ravasi, D. & Zattoni, A. 2006. Exploring the political side of board involvement in strategy: A study of mixed-ownership institutions. *Journal of Management Studies*, 43(8): 1671 – 1702.
- Reuer, J.J., Klijn, E., & Lioukas, C.S. 2014. Board involvement in international joint ventures. *Strategic Management Journal*, forthcoming.
- Ring, P.S. 2002. The role of contracts in strategic alliances. In Contractor, F.J., & Lorange, P. (Eds.), *Cooperative Strategies and Strategic Alliances*: 145-162. London, UK: Elsevier Science.
- Schaan, J.L. 1983. *Parent Control and Joint Venture Success: The Case of Mexico*. Unpublished doctoral dissertation, University of Western Ontario.
- Tsang, E.W.K. 2002. Acquiring knowledge by foreign partners from international joint ventures in a transition economy: learning-by-doing and learning myopia. *Strategic Management Journal*, 23: 835 – 854.
- Westphal, J.D., & Zajac, E. 1995. Who shall govern? CEO/ Board power, demographic similarity, and new director selection. *Administrative Science Quarterly*, 40(1): 60-83.
- Westphal, J.D., & Zajac, E. 1997. Defections from the inner circle: Social exchange, reciprocity, and the diffusion of board independence in US corporations. *Administrative Science Quarterly*, 42(1): 161-183.
- White, S., & Lui, S.-Y. 2005. Distinguishing costs of cooperation and control in alliances. *Strategic Management Journal*, 26(10): 913-932.
- Yan, Y., Child, J. 2002. An analysis of strategic determinants, learning and decision making in Sino-British joint ventures. *British Journal of Management*, 13: 109-122.
- Yermack, D. 1996. Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, 40(2): 185-211.
- Yin, X., & Shanley, M. 2008. Industry determinants of the “merger versus alliance” decision. *Academy of Management Review*, 33(2): 473-491.
- Zahra, S.A., & Pearce, J.A. 1989. Board of directors and corporate financial performance: A review and integrative model. *Journal of Management*, 15: 291-334.

TABLE 1
Descriptive Statistics and Correlation Matrix^a

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. JV board size	5.30	2.44	1.00											
2. JV board monitoring	19.00	4.63	0.17 [†]	1.00										
3. JV size	3.76	2.33	0.38 ^{***}	0.16	1.00									
4. JV scope	3.61	2.08	0.17 [†]	0.20 [*]	0.25 ^{**}	1.00								
5. JV age	1.88	0.58	0.11	0.23 [*]	0.37 ^{***}	0.03	1.00							
6. Greenfield JV	0.78	0.40	0.03	-0.02	-0.15 [†]	-0.06	-0.11	1.00						
7. Term specificity	14.34	4.22	0.10	0.17 [†]	0.15	-0.07	-0.03	0.09	1.00					
8. Prior ties	0.28	0.45	0.21 [*]	0.09	0.07	0.15 [†]	-0.02	0.10	-0.09	1.00				
9. Small numbers	2.50	0.74	0.07	0.09	0.01	0.06	-0.07	-0.08	-0.15 [†]	0.09	1.00			
10. Number of partners	2.66	1.18	0.01	-0.08	-0.04	-0.21 [*]	0.19 [†]	0.12	-0.10	0.23 [*]	-0.12	1.00		
11. International joint venture	0.73	0.45	0.17 [†]	-0.06	0.26 ^{**}	0.25 ^{**}	0.19 [†]	-0.20 [*]	0.19 [*]	-0.11	0.03	-0.32 ^{**}	1.00	
12. Environmental uncertainty	2.89	0.92	-0.02	-0.20 [*]	0.01	0.04	-0.24 ^{**}	-0.09	0.06	0.04	0.24 [*]	-0.02	-0.09	1.00

^aN=105. † p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001.

TABLE 2
Determinants of JV Board Size and JV Board Monitoring^a

	JV Board Size		JV Board Monitoring					
	I	II	III	IV	V	VI	VII	VIII
Intercept	1.43*** (0.33)	1.29** (0.40)	15.44*** (3.44)	15.07*** (3.61)	13.76*** (2.94)	10.19*** (3.53)	17.00*** (3.47)	10.36** (3.61)
Sector fixed effects	Incl.	Incl.	Incl.	Incl.	Incl.	Incl.	Incl.	Incl.
Environmental uncertainty	-0.01 (0.05)	-0.01 (0.05)	-1.39** (0.46)	-1.41** (0.45)	-1.62*** (0.41)	-1.27** (0.46)	-1.53*** (0.43)	-1.48*** (0.41)
International joint venture	0.06 (0.13)	0.03 (0.14)	-0.86 (1.19)	-1.00 (1.21)	-2.13* (0.99)	-1.68 (1.24)	-0.95 (1.14)	-3.38** (1.03)
Number of partners	0.04 (0.13)	0.10 (0.15)	-2.56 (1.65)	-2.59 (1.66)	-2.49 [†] (1.49)	-2.38 (1.53)	-2.51 (1.61)	-2.88 [†] (1.55)
Small numbers	-0.01 (0.06)	0.01 (0.07)	1.28* (0.60)	1.30* (0.61)	1.59** (0.55)	1.17* (0.55)	1.16* (0.61)	1.58** (0.58)
Prior ties	0.29** (0.10)	0.20* (0.10)	0.22 (0.83)	0.19 (0.84)	-0.58 (0.85)	0.34 (0.80)	0.18 (0.82)	-0.19 (0.83)
Term specificity	0.01 (0.01)	0.01 (0.01)	0.21 [†] (0.12)	0.22* (0.11)	0.24* (0.09)	0.31** (0.11)	0.25* (0.11)	0.38*** (0.10)
JV board size	---	---	0.93* (0.42)	0.92* (0.42)	1.08** (0.39)	0.92* (0.41)	1.01** (0.39)	1.09** (0.37)
JV board size ²	---	---	-0.05* (0.02)	-0.05* (0.24)	-0.06* (0.02)	-0.05* (0.02)	-0.05* (0.02)	-0.06** (0.02)
JV size (H1)	---	0.05* (0.02)	---	0.15 (0.18)	---	---	---	-0.03 (0.17)
JV scope (H2)	---	-0.07 (0.09)	---	---	0.54** (0.19)	---	---	1.86* (0.78)
JV age (H3)	---	0.01 (0.02)	---	---	---	2.15** (0.71)	---	0.49* (0.20)
Greenfield JV (H4)	---	0.14 (0.12)	---	---	---	---	-2.10* (0.83)	-1.98* (0.79)
χ^2	101.78***	82.05***						
Log-likelihood	-233.50	-220.78						
F-value			3.32***	3.55***	5.47***	4.43***	4.51***	7.44***
R ²			0.27	0.27	0.38	0.35	0.32	0.43

^a N=105. Robust standard errors appear in parentheses. [†] p < 0.10; * p < 0.05; ** p < 0.01; *** p < 0.001.