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# Agent and Task Complexity in Multilateral Alliances: The Safeguarding Role of Equity Governance

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## ABSTRACT

Multilateral alliances are an inherently complex organizational form; managing these complexities is particularly difficult for alliance partners because alliances are plagued by both internal and external uncertainty. Using insights from transaction cost economics, our study identifies, articulates and tests different forms of alliance complexity and their impacts on alliance governance structure. Specifically, we investigate two forms of alliance complexity: agent and task. We decompose agent complexity into organizational and partner complexity, and decompose task complexity into geographic, transaction and technological complexity. Using a sample of 327 trilateral alliances, the most frequent form of multilateral alliances, we find that three forms of alliance complexity involving internal uncertainty (organizational, partner and technological complexity) favor equity-based governance, whereas external uncertainty in the form of geographic complexity discourages equity-based governance.

## 1. Introduction

Prior management literature has emphasized alliances as a critical tool of competition and essential component of firm strategy (Ireland et al., 2002). Given the potential benefits from partnering, the multilateral alliance, a cooperative arrangement involving three or more partner firms (Das and Teng, 2002; Lavie et al., 2007; Li et al., 2012a), has become a widely disseminated form of inter-firm cooperation (Heidl et al., 2014; Xu et al., 2014). Researchers have shown that multilateral alliances constitute between 27% (Gulati, 1995) and 55% (Makino and Beamish, 1998) of all alliances. When compared to bilateral (two-party or dyadic) alliances, multilateral alliances offer similar and often greater advantages to partner firms in terms of access to complementary resources, market information and investment opportunities.

At the same time, multilateral alliances are an inherently complex organizational form and managing these complexities can be particularly difficult for alliance partners because alliances are plagued by both internal and external uncertainty. For example, multilateral alliances involve more partners than bilateral alliances, and typically also engage in larger and riskier projects. As a result of these differences in degree or scale, multilateral alliances are viewed as having greater managerial complexity than bilateral alliances (Garcia-Canal et al., 2003; Killing, 1988).

In addition to differences “in degree”, there are also differences “in kind” between bilateral and multilateral alliances. Collaborative relationships can be substantially different and often more challenging to manage in multilateral than in bilateral alliances (Das and Teng, 2002; Li et al., 2012a). For example, game theorists (e.g., Dawes, 1980; Orbell and Dawes, 1981) point out that the specificity-of-harm feature in a two-party dilemma loses its applicability in a multiparty game. Social network researchers,

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dating back to [Simmel \(1950\)](#), stress that multilateral relationships are unique and differ from bilateral ones in terms of individuality, individual bargaining power and conflict. Social exchange scholars posit that the one-to-one correspondence of restricted exchange relationships in dyads disappears in the generalized exchange relationships characteristic of triads ([Das and Teng, 2002](#); [Ekeh, 1974](#)).

The existing alliance literature has also recognized that there are significant “in-kind” distinctions between bilateral and multilateral alliances (e.g., [Das and Teng, 2002](#); [Doz and Hamel, 1998](#); [Gomes-Casseres, 1994, 1996](#); [Heidl et al., 2014](#); [Lavie et al., 2007](#); [Li et al., 2012a](#); [Xu et al., 2014](#)). Perhaps one of the most important differences is that in bilateral alliances, reciprocities of partner input and output are direct, opportunistic behaviors easily observed, and penalties exercised with accuracy. In contrast, in multilateral alliances, reciprocities are often indirect, opportunistic behaviors by individual partners hard to detect, and coordinating collective sanctions difficult.

Although the greater complexity of multilateral alliances is often acknowledged, in-depth examination of the complexity of multilateral alliances is sparse, and the mechanisms available to alliance partners to handle different types of alliance complexity under internal and external uncertainty are under-studied. Our paper contributes to this literature by using insights from transaction cost economics (TCE) to unpack the concept of complexity within multilateral alliances, building on [Killing \(1988\)](#). First, we posit that complexity can arise from the nature of the exchange and social relationships among the alliance partners, which we refer to as *agent complexity*. We decompose agent complexity into two subtypes: *organizational complexity* (whether the partners have a net-based or chain-based exchange relationship) and *partner complexity* (where the nationalities and/or cultures of the partner firms differ). Second, we posit that alliance complexity can also arise from the characteristics of the tasks performed by the alliance partners, which we refer to as *task complexity*. We categorize task complexity into three subtypes: *geographic complexity* (where the alliance targets different markets), *transaction complexity* (where the number of tasks in the alliance varies) and *technological complexity* (where the technological sophistication of the tasks varies). Our work builds on the distinction between “agent” and “task” that has been adopted in recent work on organizational design; see, for example, [Puranam et al. \(2012\)](#) on agent and task interdependence and [Lin \(2014\)](#) on task interdependence.

Partnering firms must manage both agent and task complexity during the initial formation of an alliance and later in managing the on-going relationships and tasks in the alliance. One well-researched mechanism for enhancing the collaborative effectiveness of alliances is governance structure; that is, the choice between an equity-based or contractual alliance ([Oxley, 1999](#); [Pisano, 1989](#)). Equity governance is expected to align the interests of alliance partners to minimize potential opportunistic behaviors while non-equity governance lacks the shared ownership and administrative structure to monitor partner behaviors ([Contractor & Lorance, 1988](#); [Globerman and Nielsen, 2007](#)).

To date, most research on alliance governance modes has theoretically and empirically focused on bilateral alliances. In one of the few studies of bilateral versus multilateral R & D alliances, [Li et al. \(2012a\)](#) showed that equity-based governance was more common among multilateral than bilateral R & D alliances. The findings of earlier research on bilateral alliances ([Oxley, 1999](#); [Pisano, 1989](#)) and on multilateral R & D alliances ([Li et al., 2012a](#)) suggest that governance structure may be a mechanism to curb opportunism and boost collaboration in multilateral alliances more generally. Our paper seeks to expand research on R & D alliances to cover all types of multilateral alliances. We ask: *how do agent and task complexity affect the adoption of particular governance structures (specifically, equity versus contractual structures) by multilateral alliances?* We use insights from TCE logics to develop our theoretical arguments.

Multilateral alliances, by definition, include three or more partners; our theory development and empirics focus on three-party or trilateral alliances, for theoretical and pragmatic reasons. First, prior research has shown that the most substantial transformation of the exchange relationship occurs in moving from a dyad to a triad, with only incremental alterations as the alliance increases beyond three partners ([Krackhardt, 1999](#)). Earlier studies have also reported inconclusive relationships between the number of partners and managerial challenges. For instance, [Dussauge et al. \(2000\)](#) and [Chung and Beamish \(2012\)](#) argue that the likelihood of dissolution of multilateral alliances is higher due to their greater managerial complexity; [Beamish and Kachra's research \(2004\)](#), however, found no significant relationship between the number of partners in an international joint venture and the venture performance, even when moderators such as venture types are considered. Given the substantial transformation of the exchange relationship from a dyad to a triad in comparison to the incremental alternative from a triad to a larger group in terms of the number of partners involved, we argue that it is critical to better understand multilateral alliances with three partners before diving into their alternations with four or more partners. Second, trilateral alliances are the largest portion of multilateral alliances; for example, [Li et al. \(2012a\)](#) report that two-thirds of their sample of multilateral R & D alliances were trilateral.

The benefits of our study to the existing management literature encompass three primary contributions. First, we contribute to the increasing yet still limited body of literature on multilateral alliances by revealing the distinctive effects of different types of complexity on governance mode. Although prior research such as [Garcia-Canal et al. \(2003\)](#), [Colombo \(2003\)](#), [Garcia-Canal \(1996\)](#), and [Phene and Tallman \(2012\)](#) have identified the aggravated coordination problem in multilateral alliances, none of these studies examined types of social exchange relationships among partners. We fill the research gap by explicitly theorizing and empirically testing the effects of two main categories (and five total sub-types) of managerial complexities in trilateral alliances. Second, despite the fact that previous studies have made significant progress in enriching our understanding of dyadic alliances between two partners from different countries (e.g., [Kobernyuk et al., 2014](#); [Kranenburg et al., 2014](#)), we know little about the complexity arising from partner nationalities in alliances with three or more partners, and how varying types of exchange relationships further complicate international collaboration. Our research represents an early effort to untangle the seemingly muddled relationships among multiple partners from different countries and highlights a number of uncharted areas of research on multilateral alliances. Third, for sociology research, our demonstration of the double-layered (agent and task complexities) relationship among three partnering firms infuses new blood to the classic theme of social exchange research, and calls for scholarly attention to the critical role that contextual factors play in affecting the design and process of social exchanges.

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