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## Power imbalance and value creation in joint ventures

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## ABSTRACT

Joint ventures (JVs) often do not create expected value due to power imbalance between partners. Despite the fact that JV partners are embedded in relational constraints, prior research has largely relied on economic reasoning by focusing on equity ownership difference between JV partners as the main source of power imbalance. We extend prior research to also consider important relational factors represented by repeated ties between partners and network openness, as well as institutional status difference and network status difference as two additional dimensions of power imbalance. Our findings indicate that ownership power imbalance by itself does not have a significant effect on value creation. However, value creation is facilitated when there is ownership power imbalance between partners with more repeated ties. In contrast, value creation may be hindered when JV partners with unequal ownership are embedded in more open interfirm alliance networks. Furthermore, value creation is facilitated if JV partners that have unequal ownership also have network status power imbalance in the same direction.

### Introduction

Power imbalance between partners in strategic alliances such as joint ventures (JVs) is common. It may significantly affect JV outcomes such as value creation (Hamel, 1991; Hoehn-Weiss et al., 2017; Luo, 2008; Tong et al., 2008; Yan and Gray, 2001). Power imbalance can be defined as the difference in the power possessed by each partner in a JV. Such power typically reflects the dependency that one partner firm in a JV has on the other firm (Casciaro and Piskorski, 2005). How does power imbalance influence JV value creation?

Prior research suggests that power imbalance can cause conflict and tension that may be detrimental to JV outcomes as a whole, and symmetry in power is more beneficial (Inkpen and Beamish, 1997; Makhija and Ganesh, 1997; Panico, 2017; Steensma and Lyles, 2000). The main premise of this view is that the balance of power assumes mutual dependence of partner firms, which creates a need to cooperate. The balance of power may facilitate social exchange between partners characterized by reciprocity and trust, as well as mitigate opportunistic behavior (Panico, 2017). Accordingly, when “the balance of power shifts ... the need for cooperation between the partners may diminish or disappear” (Inkpen and Beamish, 1997: 183), which, in turn, can be detrimental to value creation.

While the literature has often focused on economic-based factors, specifically power imbalance in the form of equity ownership difference in JVs (henceforth, ownership power imbalance), partner firms can have relationship constraints within and beyond the JV (Chung and Beamish, 2010; Inkpen and Beamish, 1997; Madhok, 2006a; Oxley, 2009). We argue that focusing solely on the ownership

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power imbalance omits the equally important *relational* aspect of JVs, which may change the way ownership control distribution affects social exchange, opportunism, and stability in a JV. Unequal ownership is not necessarily a detrimental form of JV governance if this relational aspect is accounted for in conjunction with ownership. As some prior research has suggested, having one dominant partner in a JV may actually be beneficial for JV outcomes (Killing, 1983; Mjoen and Tallman, 1997). Applying a social exchange perspective and drawing on status research, we consider a JV's relational characteristics, focusing on three relational factors that may alter the negative effect of ownership power imbalance on social exchange, reduction of opportunistic behavior, and stability in JVs (Das and Teng, 1998, 2001; Ma et al., 2013). First, repeated ties between JV partners may foster norms of trust, thereby making such power imbalance less detrimental for value creation. Second, networks rich in structural holes may present more alternative opportunities and thereby, conversely, strengthen the negative effect of such power imbalance on value creation.<sup>1</sup> Third, we also account for other dimensions of power imbalance, specifically from the differences in both institutional status (social ranking) and network status (network centrality) between JV partners, as they may also alter the economic power relationship and mitigate the negative relationship between ownership power imbalance and JV value creation (Lin et al., 2009).

Overall, this paper addresses two important questions. (1) How does ownership power imbalance influence value creation in JVs? (2) How is this influence contingent on repeated ties, structural holes in the interfirm network, and status differences between JV partners? The first question is the baseline question extensively investigated in earlier work. Building on this question, our second question strives to bring previously underappreciated contributions from research on relational factors to focus on the impact of power relationships on JV value creation.

We endeavor to make two contributions. First, we extend prior research by exploring how ownership power imbalance in JVs *interacts* with the relational factors in a JV, influencing value creation (Chen et al., 2009; Granovetter, 1985; Tong and Li, 2013). Specifically, we explore the moderating effects that may alter how ownership power imbalance affects social exchange and JV stability—repeated ties and structural holes in the JV partners' networks. We thus contend that power imbalance produced by economic mechanisms, such as ownership difference, may not provide sufficient prediction for JV value creation. Second, we reconcile prior research on status-heterophilous ties (Castellucci and Ertug, 2010; Podolny and Phillips, 1996) by considering *multidimensional* status differences—specifically institutional and network status differences. These status differences may change the dynamics of cooperation by introducing deference and hierarchy in the relationship, and thus may be additional sources of power imbalance.<sup>2</sup> We further examine how such status-based power imbalance may moderate the effect by ownership power imbalance on value creation in a JV. Overall, our findings contribute to JV research by suggesting that alliance value creation encompasses complex power relationships, and that ownership power imbalance as a factor of value creation should be considered not in isolation, but in conjunction with the relationship characteristics of a JV.

### Joint venture power imbalance and value creation

Prior research has explored imbalance in alliance relations in terms of resource input (Mjoen and Tallman, 1997; Inkpen and Beamish, 1997), reputation (Kalaigianam et al., 2007), learning (Hamel, 1991; Li et al., 2008), management control (Luo et al., 2001; Steensma and Lyles, 2000), and overall perceived bargaining power (Lin and Germain, 1998; Yan and Gray, 1994).

Oliver (1990) suggests that imbalance (labeled as “asymmetry”) is one of the main determinants of strategic alliances, because it creates an opportunity to exercise power and control over a partner. Prior research reviewed above largely focuses on economic-based dimensions of power, such as ownership, management control, and financial strength (Barden et al., 2005; Blodgett, 1991; Choi and Beamish, 2004; Inkpen and Beamish, 1997; Meschi et al., 2017). However, we suggest that beyond economic-based factors—such as resources or ownership—other factors that directly pertain to the *relationship* between JV partners (largely overlooked by prior research in this context) also need to be accounted for. Specifically, repeated ties facilitate norms of embeddedness and trust between partners and may mitigate the negative effect of the ownership power imbalance on JV value creation so that it is more conducive to cooperation (Gulati, 1995). However, network openness may present more alternative opportunities for partners, exacerbate instability caused by ownership power imbalance, and therefore strengthen its negative influence on cooperation and ultimately value creation. In addition, status differences between partner firms (as another form of power imbalance) create expectations of deference, and partners in a status-heterophilous JVs may have a significantly different relationship compared to those in JVs with more equal status (Castellucci and Ertug, 2010). Therefore, the influence of ownership power imbalance on cooperation (and JV value creation) may be also altered by such status differences. Our theoretical framework is illustrated by Fig. 1.

While moderators of the influence of power imbalance in strategic alliances have generally received scant attention in the literature, several moderators have been noted. In particular, cooperation and social exchange have been found to be more negatively affected by power imbalance in cross-border (international) alliances due to their complexity and cultural differences (Luo et al., 2001; Meschi et al., 2017; Steensma and Lyles, 2000). Looking at cross-border JVs in Hungary, Steensma and Lyles (2000) find that technical and managerial support provided by the foreign partner to the local partner alleviates the level of conflict stemming from power imbalance. Examining power imbalance in terms of financial resources, Meschi et al. (2017) find that cross-border JVs in Brazil are less likely to be terminated when the power imbalance is in favor of the local JV partner.

<sup>1</sup> Here we refer to the interfirm networks of each JV partner.

<sup>2</sup> Henceforth, we refer to power imbalance through institutional status difference as “institutional status power imbalance” and to power imbalance through network status difference as “network status power imbalance.”

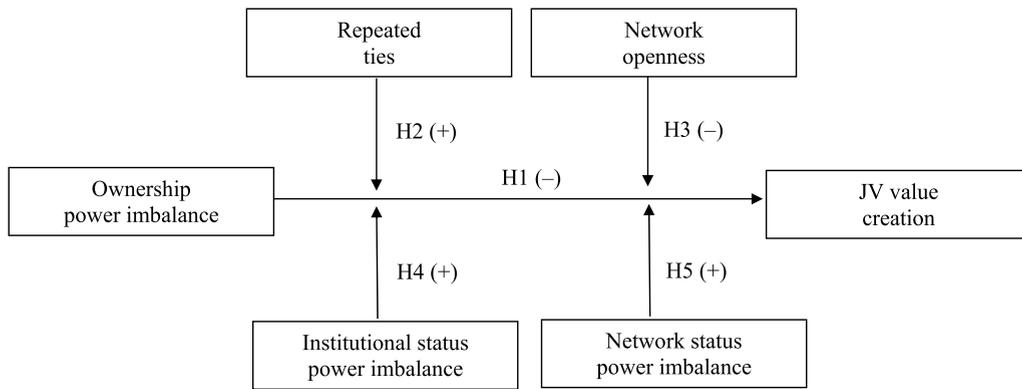


Fig. 1. Theoretical framework.

### Ownership power imbalance

Probably the most extensively studied basis of power imbalance in JVs is ownership—the share of equity controlled by each partner that reflects legitimate power (French and Raven, 1959).<sup>3</sup> JVs are incomplete contracts, and equity ownership grants residual rights of control that cannot be contractually specified (Aghion and Holden, 2011; Luo, 2002). In other words, ownership is the “means of possessing a resource and therefore controlling it” (Pfeffer and Salancik, 1978: 48). Equity ownership involves legitimate rights over resources and profits in a JV acknowledged by both partners. Therefore, equity is one of the main sources of bargaining power in JVs (Blodgett, 1991; Hallen et al., 2014; Meschi et al., 2017). Partner firms can exercise power through equity ownership by having an influence in decision making in a JV. For example, having higher equity ownership will likely allow the partner firm to have more representatives on the board of directors and the top management team, leading to more influence in making strategic decisions in a JV (Madhok, 2006b).

When looking at JV as a whole, however, ownership power imbalance may be detrimental for value creation, for two reasons. First, shared ownership entails mutual dependence and mutual forbearance (Casciaro and Piskorski, 2005; Piaskowska et al., 2017), facilitating social exchange, defined as a type of exchange between JV partners characterized by *reciprocity*, in which actions are “contingent on rewarding reactions from others” (Blau, 1964: 6; Das and Teng, 1998, 2001; Das and Teng, 2002; Steensma et al., 2008). Such social exchange is crucial for cooperation in JVs (Li et al., 2009; Meschi et al., 2017; Peng and Shenkar, 2002). Accordingly, when the balance of power breaks down, the social exchange may be hampered and cooperation decreases (Chung and Beamish, 2010; Das and Teng, 2002; Inkpen and Beamish, 1997). Partners may attempt to benefit at the expense of each other, making a JV a zero-sum game, shifting cooperative behavior to competitive behavior, and reducing the overall JV value creation (Das and Teng, 2000; Kumar, 2010). In addition, the social exchange arrangement may reduce opportunistic behavior within a JV, as such behavior will likely violate the trust built within the JV relationship and consequently nullify the benefits based on this trust (Choi and Beamish, 2004; Williamson, 1985). Opportunistic behavior may also be more easily recognized when ownership is shared more equally (Saxton, 1997). Thus, ownership power imbalance may hinder cooperation through reducing social exchange and increasing the probability of opportunistic behavior, which may lead to less value creation (Hamel, 1991; Inkpen and Beamish, 1997; Muthusamy and White, 2006; Steensma and Lyles, 2000).

Second, ownership power imbalance may introduce instability to a JV. By instability we mean unplanned and premature changes in terms or structure of a JV (Inkpen and Beamish, 1997). Prior research has noted that JVs with uneven division of equity may have more renegotiation of contract terms in the future, which can lower cooperation and value creation (Beamish and Banks, 1987; Blodgett, 1992). More equal ownership allows for shared decision making in a JV, which may lead to both partners to accommodate each other and compromise in order to achieve common goals (Luo, 2008; Saxton, 1997). Stability in a JV hinges on such mutual dependence (Chung and Beamish, 2010; Inkpen and Beamish, 1997; Polidoro et al., 2011). In contrast, a lack of mutual dependence due to ownership power imbalance may breed conflict in a JV, causing instability through more frequent renegotiation (Beamish and Inkpen, 1995; Fang and Zou, 2010; Iriyama et al., 2014). That is because the dominant partner in a JV may be in a position to impose its terms on the minority partner in a JV, while the partner with the minority ownership, in response, is less likely to commit to the JV as a result because of its vulnerability to the dominant partner’s potential opportunistic behavior (Blodgett, 1992; Fang and Zou, 2010; Steensma et al., 2008). Overall:

**Hypothesis 1.** Ownership power imbalance is negatively associated with value creation in a JV.

<sup>3</sup> Following Peng and Shenkar (2002), all our theoretical arguments assume bilateral (two-partner) JVs.

## The moderating effect of repeated ties and network openness

Oliver (1990) proposes that JV relationships may be guided not only by the power of one firm over others (asymmetry), but also by embeddedness, which emphasizes “common or mutually beneficial goals or interests.” Along similar lines, the alliance literature has provided insights on the influence of repeated ties facilitating norms of embeddedness and trust (Birnbirg, 1998; Goerzen, 2007; Granovetter, 1985; Gulati, 1995; Huang et al., 2016; Lawson et al., 2008; Zheng and Yang, 2015). These norms facilitated by repeated ties can help alleviate the negative impact of power imbalance on cooperation and value creation. Repeated ties encourage partners to be more flexible and rely on the norms of trust rather than on equity and contractual governance to coordinate, make decisions, and resolve conflicts, even if one partner holds a dominant share of equity (Ariño et al., 2014; Reuer et al., 2002; Reuer and Ariño, 2007).

Such an arrangement may reduce the influence of equity in a JV relationship. For example, firms are less likely to choose an equity-based alliance if they have a history of working together in the past (i.e., repeated ties) (Gulati, 1995). In JVs where partners have developed the norms of trust through repeated ties, ownership power imbalance may have a weaker negative effect on social exchange because under the norms of embeddedness and trust firms may be less likely to take a zero-sum game mentality toward their partners. They may be less likely to exploit ownership power imbalance to their own advantage at the partner’s expense. Building trust through repeated ties is costly, which creates an incentive to not violate this trust (Zhong et al., 2017). Thus, partners may have an incentive to suppress opportunistic behavior and cooperate more despite the presence of the ownership power imbalance. Consequently, when partner firms have repeated ties, ownership power imbalance may represent a more stable and effective form of interfirm governance and allow JV relationships to be more cooperative, resulting in more value creation as compared to JVs where partners have no trust norms built through past history. Therefore:

**Hypothesis 2.** Repeated ties between JV partners mitigate the negative relationship between ownership power imbalance and value creation.

The influence of ownership power imbalance on value creation may be altered not only by the nature of interaction between the partners in an alliance network, but also by the characteristics of the network itself (Yang et al., 2011). We propose that openness of each partner firm’s network (defined as the amount of brokerage positions or structural holes connecting otherwise disconnected firms in the network) is likely to strengthen the negative effect of ownership power imbalance on value creation. Specifically, we consider interfirm network of strategic alliances in which each partner is embedded. In comparison with more closed networks, more open alliance networks provide access to more diverse information and more abundant opportunities, and firms are likely to be less dependent on a particular JV (Burt, 1992; Hughes-Morgan and Yao, 2016; Lavie, 2007; Shipilov et al., 2011).

Given the abundance of opportunities in open alliance networks, the negative effect of ownership power imbalance on JV stability may be exacerbated if both partners are positioned in networks rich in structural holes. That is because both partners will have more available alternatives beyond the focal JV, and may be more likely to engage in renegotiations in order to exploit ownership power imbalance in their favor (de Rond and Bouchikhi, 2004), as compared to JVs where both partners are located in more closed networks. For example, the JV partner with the majority equity stake may demand more efforts and on more favorable terms (Dwyer and Walker, 1981), while at the same time the JV partner with the minority of equity may be more willing to disengage from a JV and less willing to compromise in response when both firms have more alternative opportunities outside the focal JV. Specifically:

**Hypothesis 3.** When both partners in a JV are located in more open networks, the negative relationship between ownership power imbalance and value creation will be stronger.

## The moderating effect of status differences

In addition to repeated ties and network openness, power imbalance caused by status differences, although less explored in prior JV research, can have a significant influence on the relationship within a JV. Numerous studies have shown that partners may not always follow economic rationalities. Those of similar status may interact quite differently compared to partners of different status due to deference expected from a lower-status firm towards a higher-status firm (Podolny, 1993). Status differences are thus another important relational factor that need to be accounted for when looking at the influence of ownership power imbalance on JV value creation.

Furthermore, status can be a source of power as well. We propose that the view of power imbalance as solely based on ownership control neglects other bases of power—particularly, intangible, socially constructed, and relational resources, such as firm status. There may be multiple bases or dimensions of power that go beyond the economic-based dimension (French and Raven, 1959), and these different power dimensions may not always go hand in hand but can interact with each other, which may have a significant effect on value creation (Peng and Shenkar, 2002). Power and status are conceptually distinct. Yet, power imbalance is likely to occur in status-heterophilous JVs, given the reinforcing nature of status and power (Magee and Galinsky, 2008; Thye, 2000; Thye et al., 2006). The key distinction between status and power is that power signifies “potency, the ability to have an effect” (Salancik and Brindle, 1997: 112), while status is a ranking in the social hierarchy granted by others (Magee and Galinsky, 2008). However, an association with a higher-status firm can be considered an intangible resource that a lower-status firm needs, thus creating dependency (Castellucci and Ertug, 2010). In contrast, the higher-status firm typically does not have a comparable dependency on its lower-status partner (Lavie, 2007). Thus, power imbalance is created in status-heterophilous JVs.

Numerous studies suggest a negative influence of affiliating with a lower-status partner on the higher-status firm’s own status and performance, showing benefits of status homophily (Chung et al., 2000; Li and Berta, 2002; Podolny, 1993, 1994; Podolny and Phillips,

1996; Stuart, 2000). Next, we describe how considering the moderating roles of two dimensions of status power imbalance on the effect of ownership power imbalance may help to partially explain how shared JV value creation may be contingent on status-heterophilous ties.

### *Status as a multidimensional concept*

A limitation of prior research is that status is usually treated as a one-dimensional concept. However, since status acts as both an actor's position and a form of identity within a social system (Merton, 1968; Weber, 1968), it may have more than one single dimension (Bitektine, 2011; Lin et al., 2009). The multidimensional nature of status (mostly on the individual level) has long been discussed in the sociology literature (Hornung, 1977), but only a few management scholars have explored implications of the multiple dimensions of status at the firm level. Status has often been measured as a firm's position in the network—network centrality (Podolny, 1993). However, status also reflects the ranking (or prominence) attributed to the firm by the society and is based on the social approval from the public (Rindova et al., 2005; Zhao and Zhou, 2011). For example, Lin et al. (2009) distinguish between societal status and network status. They find that societal status asymmetry between the focal firm and its alliance partners is more beneficial for the firm in a stable environment, while network status asymmetry is more beneficial in a dynamic environment.

Overall, status embodies (1) a firm's position and ranking in the institutionalized social order and (2) its position in the network. Extending earlier work, we consider two dimensions of firm status—institutional status and network status. *Institutional status* can be defined as a “socially constructed, inter-subjectively agreed-upon and accepted ordering or ranking of individuals, groups, organizations, or activities in a social system” (Washington and Zajac, 2005: 284). It embodies both hierarchical categorization of the firm and its ranking (evaluation) by society (Zhao and Zhou, 2011). It is important to note that institutional status is distinct from reputation, which is mainly based on rational assessment of observable quality (Washington and Zajac, 2005). Institutional status, in contrast, is a measure of *prominence* based on social rankings that grant privilege (or discrimination) to the firm that are often unrelated to actual quality (Bitektine, 2011; Washington and Zajac, 2005). Thus, unlike reputation, institutional status can be a very “noisy and incomplete” representation of actual quality (Dichev, 1999: 203). *Network status* refers to a firm's prominence and influence in the interfirm network (Podolny, 1993; Lin et al., 2009). While below we hypothesize similar moderating effects for both institutional status power imbalance and network status power imbalance, the distinction between institutional status and network status is important because of the different nature of the benefits obtained from these two different dimensions of status. Given this distinction, how do institutional status and network status power imbalances moderate the relationship between ownership power imbalance and JV value creation?

### *The moderating effect of status power imbalances*

We propose that the effect of ownership power imbalance on value creation may be moderated by both institutional status and network status power imbalances. While status differences produce power imbalance, as discussed above, status-based power imbalance is fundamentally different from ownership power imbalance. Status power imbalance is intangible, socially constructed. Ownership power imbalance is derived from tangible property rights within a JV. Applying French and Raven's (1959) bases of power, while ownership power imbalance is based on formal property rights through equity, reflecting legitimate and coercive power, status power imbalance is based on referent and reward power. A connection to a higher-status firm entails spillover benefits for the lower-status firm, forming the reward power of the higher-status firm over the lower-status partner. The referent power of the higher-status firm in a JV stems from the lower-status firm's “desire to become closely associated” with the higher-status partner due to their social ranking (French and Raven, 1959; Han et al., 2017).

Given the nature of power imbalance produced by status differences, it is reasonable to expect that the reward and referent power that the higher-status firm has over the lower-status partner will likely have a substantial influence on the JV relationship. In addition, a mismatch between different power dimensions—for example, ownership and status—may cause instability in a relationship (Emerson, 1962; Ma et al., 2013). Thus, it is important to consider how status power imbalance may alter the relationship between ownership power imbalance and value creation. We suggest that ownership power imbalance may be less detrimental to JV value creation if there are status power imbalances *in the same direction* (i.e., a partner with more equity also tends to have higher status in one or both dimensions). First, we argue that the negative effect of ownership power imbalance on JV value creation may be weakened if a partner with more equity ownership also tends to have higher institutional status. Second, we argue that the negative effect of ownership power imbalance on JV value creation may also be weakened if a partner with more equity ownership also tends to have higher network status. Empirically, the above predictions result in a positive interaction effect (1) between ownership power imbalance and institutional status power imbalance, and (2) between ownership power imbalance and network status power imbalance.

As we argue above, ownership power imbalance may hinder social exchange and potentially facilitate opportunistic behavior in a JV. However, that may change in the presence of status differences. While it may seem that having ownership power imbalance combined with status power imbalance can exacerbate these negative effects, we suggest that status power imbalance may actually do the opposite and mitigate them. That is because (unlike for other power dimensions) associating with a higher-status JV partner creates clear benefits for the lower-status firm, which introduces deference in the JV relationship. Specifically, status research suggests that a lower-status partner may obtain spillover benefits from the higher-status partner, which makes the disruption of social exchange and opportunistic behavior due to ownership power imbalance less likely to occur in a JV. In other words, “since a larger number of exchange partners are willing to work with high-status firms than with low-status ones, those that have secured affiliations to high-

status firms are likely to work hard to maintain their relationships” (Castellucci and Ertug, 2010: 151). Such spillover benefits may include a signal of quality that association with a higher-status firm brings, increased revenue, and enhanced legitimacy (Hallen et al., 2014; Podolny, 2005; Sauder et al., 2012; Shi et al., 2012; Shi et al., 2014).

Similarly, prior research shows that high network status provides numerous benefits for a firm, such as information, access to resources, and lower costs (Blyler and Coff, 2003; Lin et al., 2009; Podolny, 1993, 1994). Therefore, initiating ties with a firm of higher network status, the partner of low network status can enhance its own visibility, reputation, and access to information. It can also obtain endorsement that helps secure subsequent ties with other firms of higher network status beyond the focal JV (Ahuja et al., 2009; Stuart et al., 1999). Moreover, partnering with a higher-status firm may grant access not only to information from the network, but also about the network, which can be especially valuable for a partner of lower network status (Ibarra and Andrews, 1993; Krackhardt, 1990; Shi et al., 2014). The network status power imbalance therefore creates an incentive for the partner of lower network status to “do its best” in the JV with the more prominent partner firm.

Thus, when the ownership power advantage is combined with the status power advantage (institutional or network), it may become less detrimental for social exchange as there are more incentives for both JV partners to cooperate as compared to a situation when both firms are of similar institutional or network status or when a firm with the minority ownership has a higher institutional or network status. The firm with the majority ownership has less incentive to benefit at the expense of the firm with minority ownership (i.e., engaging in a “zero-sum game”) or behave opportunistically if the majority ownership partner also has the status power advantage because deference and spillover benefits facilitate the lower-status firm’s effort and contribution to the alliance. The minority ownership partner, in turn, has a strong incentive to cooperate given the distinct benefits of associating with a partner of higher institutional or network status.

Furthermore, both institutional and network status power imbalances may alleviate the negative influence of ownership power imbalance on JV stability. As discussed above, ownership power imbalance may trigger more competitive behavior between partners, causing instability. However, the status literature has shown that lower-status firms are less likely to initiate competitive actions against higher-status firms, which may also be perceived as less likely to violate the norms of the agreement or attempt renegotiation of terms (Han et al., 2017; Podolny and Scott Morton, 1999). In addition, the higher-status firm with dominant ownership may have less incentive to engage in such competitive behavior due to deference and spillover benefits prompting the lower-status partner to contribute more effort to the JV as a result.

Overall, these arguments suggest that when a JV partner firm with higher ownership equity also tends to have higher institutional or network status, value creation may be facilitated. Thus:

**Hypothesis 4.** When partners in a JV have institutional status power imbalance in the same direction as their ownership power imbalance, the negative impact by ownership power imbalance on value creation will be mitigated.

**Hypothesis 5.** When partners in a JV have network status power imbalance in the same direction as their ownership power imbalance, the negative impact by ownership power imbalance on value creation will be mitigated.

## Methods

### Sample

Using the Security Data Corporation (SDC) Platinum database, we first identified JVs in the U.S. computer industry (SIC codes 3571–3578 and 7371–7379) from 1991 to 2010 (inclusive). We focused on this single industry primarily for three reasons. First, the computer industry is active in strategic alliances such as JVs (Lavie, 2007; Yang et al., 2011). Second, there is significant variance in both institutional status and network status in the computer industry. Finally, the single-industry approach, while limiting generalizability, controls for unobservable industry heterogeneity.

We focused on domestic (U.S.-based) bilateral JVs to eliminate any possible confounding effects of multilateral relations within the JV (Garcia-Canal et al., 2003). This resulted in a sample of 134 JVs. The overall industry alliance network consisted of 9589 alliance ties that included all kinds of strategic alliances (equity- and nonequity-based, as well as bilateral and multilateral) announced over the chosen timeframe of 20 years. We verified alliance data using Lexis-Nexis and Dow Jones News Retrieval Service. We constructed symmetric (non-directional) alliance matrices and calculated network measures for each year using five-year moving windows (Stuart, 2000). For example, the alliance network for 2000 consists of data for 1996–2000, the network for 2001 consists of data for 1997–2001, and so on. We accordingly collected alliance data for additional four years (1987, 1988, 1989, and 1990). Network measures were calculated using the whole industry alliance network. For other variables, we used CRSP and Compustat databases.

### Dependent variable

We measured JV value creation by using cumulative abnormal returns (CAR) on each JV announcement event. CAR reflect changes in a firm’s stock price above and beyond of the amount that can be explained by fluctuations of the market as a whole (Anand and Khanna, 2000). For our purposes, it is important to have a measure of the value creation that can be attributed to a particular JV, rather than to other factors—which is why other measures of performance such as profitability or Tobin’s Q may not be appropriate. The independent and moderating variables that we focus on are also observable by investors. For these reasons, CAR within a JV announcement event window is an appropriate measure to test our hypotheses. In addition, CAR have been used extensively in prior research as a performance measure of strategic alliances such as JVs (Gulati et al., 2009; Oxley, 2009; Oxley et al., 2009).

Given that value creation has been conceptualized in different ways by prior research (Chatain, 2011; Panico, 2017), it is important to acknowledge limitations of CAR as a measure of value creation, which, according to Dyer et al. (2018), can be defined as the total value created by a JV above and beyond an arm's-length market relationship—i.e., a total net gain from a JV for both partners. CAR do not measure value creation directly, but rather reflect investors' reaction to JV announcements and their perception of (ex ante) value creation. Such a reaction may not always be an "objective, rational-deductive calculation" (Schijven and Hitt, 2012: 1248). Prior research has also introduced alternative performance measures that may be used to capture value creation over the long term, such as long-term investor value appropriation (Wibbens and Siggelkow, 2020) and buy-and-hold abnormal return (Mitchell and Stafford, 2000). Despite its limitations, we use CAR as a measure of JV value creation for two reasons. First, as noted above, this measure can be clearly attributed to a specific JV announcement. Alternative measures of value creation, while potentially capturing value creation over the long term, at the same time can introduce a bias and noise due to other factors (unrelated to the JV) compounding over time (Liu and Ravichandran, 2015; Mitchell and Stafford, 2000). Second, investors can access information about the relevant aspects of a JV following the JV announcement, and likely are able to evaluate not only the potential value generated by a JV, but also the JV's potential risks (Gulati et al., 2009; Liu and Ravichandran, 2015).

CAR were calculated using standard event study methodology (Fama et al., 1969). The JV event announcement date (obtained from SDC database) was set at  $t = 0$ . Following prior research, we used an estimation period  $t = [-250, -50]$  (Kumar, 2010). We used daily stock market data from CRSP to estimate the market model:  $r_{it} = \alpha_i + \beta_i r_{mt} + \varepsilon_{it}$ , where  $r_{it}$  is the return on common stock of firm  $i$  on day  $t$ ,  $r_{mt}$  is the return on S&P 500 index,  $\alpha_i$  and  $\beta_i$  are coefficients for firm  $i$ , and  $\varepsilon_{it}$  is an independently and identically distributed error term. The coefficients' estimates  $a_i$  and  $b_i$  were then used to predict the return  $R_{it}$ . The daily abnormal returns (AR) for firm  $i$  were calculated as follows:  $AR_{it} = r_{it} - R_{it}$ . As a final step, CAR for each firm  $i$  were calculated as the sum of AR over the three-day event window of  $[-1, +1]$ . We used the three-day event window as a more conservative approach, minimizing potential confounding effects unrelated to a JV announcement (Gulati et al., 2009; Oxley et al., 2009). For each JV, total CAR measuring value creation was calculated as a sum of CAR for each partner firm (in percent).

While JVs tend to be a positive-sum game, rather than a zero-sum game (Kumar, 2010), there is a possibility that the sum of CAR of the two partner firms may be a result of one partner appropriating value at the expense of the other. Accordingly, we tested for this possibility by running three-stage least squares (3SLS) regression where CAR of one of the two partner firms ( $CAR_i$ ) is simultaneously determined with CAR of the other partner firm ( $CAR_j$ ) (including our independent and control variables described below). Our analysis did not show any significant negative relationship between  $CAR_i$  and  $CAR_j$ .

### Independent and moderating variables

#### Ownership power imbalance

We calculated ownership power imbalance as an absolute difference in the equity share (in percent) between the two partner firms. The data were obtained from SDC. This measure—labeled as *ownership power imbalance (absolute)*—was used to test Hypotheses 1–3. For Hypotheses 4–5 we used a directional measure by subtracting the equity share of one of the partner firms (firm  $j$ ) from the equity share of the other partner firm (firm  $i$ )—labeled accordingly as *ownership power imbalance (i-j)*.

#### Repeated ties

We calculated the number of repeated ties by counting the number of ties between the partner firms after the initial alliance relationship. For example, two ties between the two partner firms correspond to one repeated tie for the JV. To account for possible erosion of ties (Poppo et al., 2008), we used a five-year moving window to calculate a total number of repeated ties for each JV.

#### Network openness

As described above, we construct the industry alliance network to measure network variables. We first used the effective size measure computed in Ucinet 6 to evaluate network openness of each partner firm in a JV (Borgatti et al., 2002; Burt, 1992). This measure reflects the proportion of ties in each partner firm's ego network of alliances that are non-redundant (i.e., not connected to each other) (the partners in the focal JV were excluded from this calculation). Second, to account only for existing alliances, we used a five-year moving window to measure network openness. Finally, to measure network openness for our purposes, we need to capture situations when *both* partners are positioned in more open networks. Accordingly, we created a dummy variable that equals 1 if both the effective size score of firm  $i$  and the effective size score of firm  $j$  are higher than the overall mean score (the average of all firms in our sample), and 0 otherwise.

#### Institutional status power imbalance

We used rankings from *Fortune's* "Most Admired Corporations" annual survey from 1988 to 2010 to measure institutional status. This measure has been used by prior research as a measure of both status and reputation (Fombrun and Shanley, 1990; Lin et al., 2009; Roberts and Dowling, 2002). *Fortune's* list is based on a survey of over 8000 senior executives, outside directors, and investment analysts. Firms are ranked on eight criteria that include social responsibility, innovativeness, long-term investment value, financial soundness, quality of management, quality of products or services, ability to attract and keep talented people, and use of corporate assets on a scale from 0 (lowest) to 10 (highest). We argue that the *Fortune's* list is an appropriate measure of institutional status, as this measure of institutional status is essentially a ranking of a firm's prominence, reflecting a firm's categorization within a social hierarchy (Lin et al., 2009; Rindova et al., 2005). Such a ranking may not necessarily relate to actual quality but rather serve as a third-party evaluation of a firm's prominence—i.e., institutional status (since companies in *Fortune's* list are evaluated by a survey of

**Table 1**  
Descriptive statistics and correlation matrix.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1 CAR	1.06	7.62											
2 Relative alliance experience	9.86	32.27	-0.02										
3 Resource complementarity	0.18	0.24	0.09	-0.09									
4 Firm size (i)	26,205.88	44,518.57	0.05	0.11	-0.12								
5 Leverage (i)	0.21	0.17	0.15	-0.04	-0.10	<b>0.26</b>							
6 Firm age (i)	2.98	0.82	0.14	0.14	-0.07	<b>0.38</b>	<b>0.26</b>						
7 ROA (i)	0.01	0.19	0.12	0.08	-0.08	0.06	-0.39	0.13					
8 Firm size (j)	41,028.61	209,576.80	0.04	-0.04	-0.11	0.00	-0.05	-0.07	0.03				
9 Leverage (j)	0.94	0.50	-0.03	0.11	0.03	-0.02	-0.04	0.05	-0.11	-0.24			
10 Firm age (j)	2.83	0.95	-0.12	-0.03	-0.28	-0.01	0.02	0.02	0.05	<b>0.18</b>	-0.01		
11 ROA (j)	0.03	0.18	-0.09	-0.03	-0.13	<b>0.18</b>	0.08	0.08	0.02	-0.01	<b>0.20</b>	0.13	
12 Network openness difference (absolute)	49.13	68.80	0.04	<b>0.47</b>	-0.15	0.06	0.01	0.11	0.10	-0.03	-0.02	0.07	0.12
13 Repeated ties	0.96	1.03	0.03	-0.08	0.10	-0.15	-0.03	-0.08	0.06	-0.03	0.12	-0.11	0.16
14 Ownership power imbalance (absolute)	3.55	14.31	0.00	-0.05	0.05	-0.04	0.11	-0.10	0.01	0.02	-0.05	0.08	-0.10
15 Ownership power imbalance (i-j)	2.67	14.51	0.01	-0.05	0.09	-0.05	0.02	-0.10	0.00	0.03	-0.07	0.13	-0.13
16 Institutional status power imbalance (i-j)	0.82	4.94	-0.01	<b>0.28</b>	0.07	<b>0.22</b>	-0.15	0.17	<b>0.26</b>	-0.04	0.04	-0.28	0.01
17 Network status power imbalance (i-j)	-0.02	0.20	-0.12	0.15	0.12	0.00	-0.27	-0.01	0.17	0.02	0.08	-0.11	0.00
Variables	Mean	SD	12	13	14	15	16						
13 Repeated ties	0.96	1.03	-0.02										
14 Ownership power imbalance (absolute)	3.55	14.31	-0.11	0.00									
15 Ownership power imbalance (i-j)	2.67	14.51	-0.07	0.00	<b>0.90<sup>a</sup></b>								
16 Institutional status power imbalance (i-j)	0.82	4.94	0.16	-0.06	0.07	0.04							
17 Network status power imbalance (i-j)	-0.02	0.20	-0.23	0.03	0.11	0.09	<b>0.18</b>						

Values highlighted in **bold** are significant at  $p \leq 0.05$  level.

<sup>a</sup> While this correlation is high, *Ownership power imbalance (absolute)* and *Ownership power imbalance (i-j)* are never included in the same model.

the external audience comparing firms with each other). A high position within this ranking will likely generate benefits for the firm—however, these benefits may not necessarily always correspond to actual quality (Washington and Zajac, 2005). If the firm was not listed in *Fortune*'s list, it was assigned a score 0 to reflect its low visibility (Lin et al., 2009).

The institutional status score is the overall score of the firm in the *Fortune*'s list. We calculated the directional institutional status difference by subtracting the institutional status score of one of the partner firms (firm *j*) from the institutional status score of the other partner firm (firm *i*). This measure reflects the relative advantage in institutional status that the firm *i* has over the firm *j*, i.e., institutional status power imbalance.

#### Network status power imbalance

Following Ahuja et al. (2009), Jensen (2008), and Podolny (1993), we used Bonacich's (1987) eigenvector centrality to capture a firm's network status. We constructed network matrices of non-directional strategic alliance ties for each year using a five-year moving window. The directional network status difference was calculated by subtracting the eigenvector centrality score of one of the partner firm (firm *j*) from the eigenvector centrality score of the other partner firms (firm *i*). This measure reflects the relative advantage in network status that the firm *i* has over the firm *j*, i.e., network status power imbalance. Eigenvector centrality was calculated in Ucinet 6 (Borgatti et al., 2002).

#### Control variables

We included control variables that may influence value creation. Since resource-based considerations may influence JV relationships, we controlled for *resource complementarity* between the partner firms in a JV. Following Lin et al. (2009), complementarity was calculated as an index based on primary four-digit SIC codes. The complementarity measure ranges from 0 to 1 (1 if no overlap, 0.75 if only the first digits overlap, 0.5 if the first two digits overlap, 0.25 if the first three digits overlap, and 0 if all four digits overlap). Since alliance experience can be an important factor influencing benefits from alliance relations (Hoang and Rothaermel, 2005, 2010; Lee et al., 2015; Liu and Ravichandran, 2015; Subramanian and Soh, 2017), we also controlled for *relative alliance experience*. Relative alliance experience was measured by counting the number of alliance ties in prior years within our sample time frame for each firm in a JV, and dividing the number of ties for the firm *i* by the number of ties for the firm *j*.

Research and development (R&D) and technology in a JV may also affect value creation (Dushnitsky and Lavie, 2010; Lioukas et al., 2016; Rothaermel and Boeker, 2008). Accordingly, we included *technology transfer* dummy variable that equals 1 if there was a transfer of technology between partners (and 0 otherwise), as well as *R&D JV* dummy that equals 1 if the purpose of a JV was R&D (and 0 otherwise).

We further controlled for *firm size* (total assets), *return on assets* (ROA), *leverage* (the ratio of debt to total assets), as well as *firm age* (in years, log-transformed) for both partner firms in a JV (firm *i* and firm *j*). *Repeated ties* were included as a control in every model as well. We also included the absolute difference between effective size scores of firm *i* and firm *j* (*network openness difference*) to control for the disparity in terms of network positions of JV partners. Finally, we included year effects.

## Results

Table 1 presents descriptive statistics. Pairwise correlations and the mean variance inflation factor (VIF) of 1.91 indicate that multicollinearity is not a major concern.

Table 2 presents results of ordinary least squares (OLS) regression with robust standard errors. Model 1 includes only control variables. Model 2 tests Hypothesis 1. The coefficient for the ownership power imbalance (absolute) is not significant ( $b = -0.01, p = 0.84$ ). Thus, Hypothesis 1 is not supported. This indicates the limitation of focusing on just the economic-based ownership control in understanding the value creation from JV relations, and points to the need to consider relational factors.

Model 3 analyzes the interaction between ownership power imbalance and repeated ties. Hypothesis 2 predicts that the relationship between *absolute* ownership power imbalance and value creation will be positively moderated by repeated ties. The coefficient for the interaction between repeated ties and ownership power imbalance is positive and significant in Model 3 ( $b = 0.4, p < 0.05$ ), providing support for Hypothesis 2. The positive coefficient indicates that for every additional repeated tie between the JV partners, the slope relating ownership power imbalance and value creation increases by 0.4, weakening the negative relationship.

Models 4 analyzes the interaction between ownership power imbalance and network openness dummy variable reflected through effective size of both JV partners. Hypothesis 3 predicts that the relationship between *absolute* ownership power imbalance and value creation will be negatively moderated by network openness. The coefficient for the interaction between network openness dummy variable and ownership power imbalance is negative and marginally significant in Model 4 ( $b = -2.53, p = 0.058$ ), providing partial support for Hypothesis 3. Model 5 includes both interaction effects, with the coefficient for the interaction between repeated ties and ownership power imbalance remaining positive and significant ( $b = 0.4, p < 0.05$ ), providing further support for Hypothesis 2, and the coefficient for the interaction between network openness dummy variable and ownership power imbalance remaining negative and marginally significant ( $b = -2.49, p = 0.063$ ), providing partial support for Hypothesis 3. The negative coefficient indicates that when network openness dummy increases from 0 to 1 (i.e., when both partners have a network openness score higher than the overall mean), the slope relating ownership power imbalance and value creation decreases by 2.49, strengthening the negative relationship.

These results of testing Hypotheses 2–3 are further illustrated by interaction plots (see Figs. 2 and 3). Fig. 2 shows that when there are few repeated ties between partners in a JV, ownership power imbalance may lead to a decrease in CAR. However, when there are more repeated ties, the relationship may become more positive. This suggests that ownership power imbalance may be less detrimental

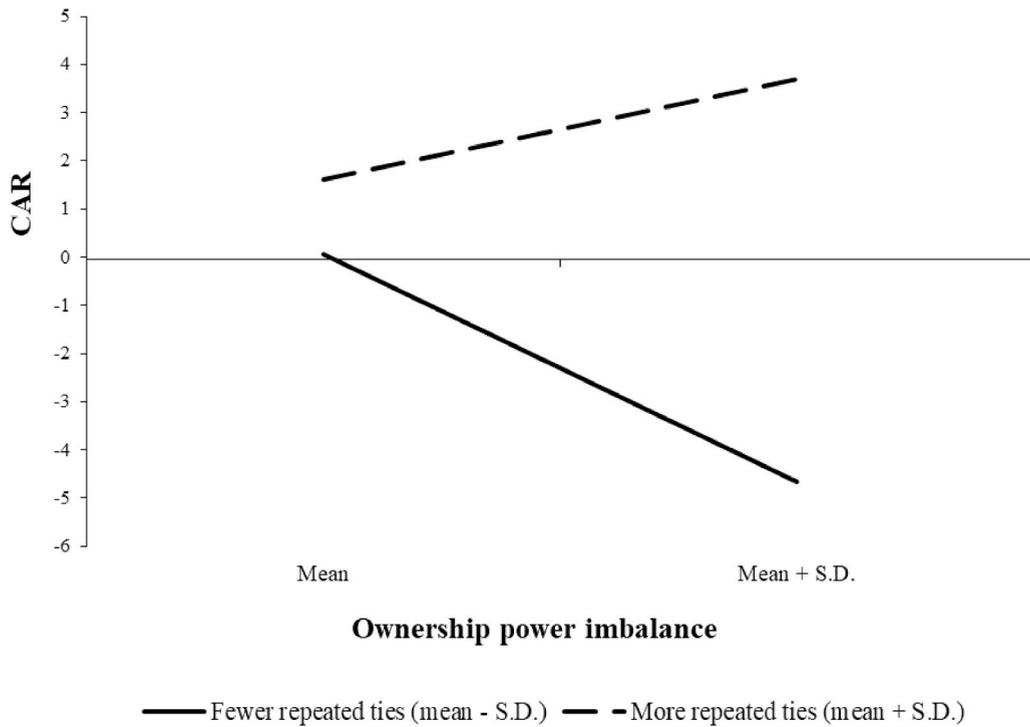
**Table 2**  
Results of OLS estimation of CAR.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Relative alliance experience	-1.60 (1.97)	-1.58 (1.98)	-1.59 (1.97)	-1.99 (2.13)	-1.98 (2.13)	-1.18 (2.09)	-0.63 (1.77)	-0.28 (1.89)
Resource complementarity	3.83 (3.43)	3.85 (3.46)	4.24 (3.51)	3.79 (3.49)	4.17 (3.54)	4.13 (3.50)	3.88 (3.54)	4.06 (3.62)
Technology transfer	0.07 (2.40)	0.12 (2.42)	1.19 (2.48)	0.04 (2.45)	1.09 (2.52)	-0.20 (2.57)	0.55 (2.32)	0.62 (2.50)
R&D JV	-1.59 (1.64)	-1.59 (1.65)	-1.96 (1.70)	-1.68 (1.66)	-2.04 (1.71)	-1.59 (1.65)	-1.44 (1.67)	-1.34 (1.64)
Firm size (i) <sup>a</sup>	-0.06 (0.07)	-0.06 (0.07)	-0.04 (0.07)	-0.05 (0.07)	-0.04 (0.07)	0.00 (0.13)	-0.05 (0.07)	0.01 (0.13)
Leverage (i)	11.58* (5.25)	11.68* (5.47)	11.70* (5.50)	10.95+ (5.56)	10.99+ (5.60)	11.50* (5.42)	11.55* (5.67)	11.10+ (5.63)
Firm age (i)	0.81 (0.83)	0.79 (0.84)	0.86 (0.84)	0.91 (0.86)	0.98 (0.86)	0.84 (0.89)	0.72 (0.83)	0.74 (0.89)
ROA (i)	9.60 (7.29)	9.66 (7.36)	9.82 (7.47)	9.42 (7.41)	9.58 (7.52)	10.73 (7.58)	11.26 (7.52)	11.97 (7.75)
Firm size (j) <sup>a</sup>	0.04+ (0.02)	0.04+ (0.02)	0.03+ (0.02)	0.04+ (0.02)	0.03+ (0.02)	0.04* (0.02)	0.04* (0.02)	0.04* (0.02)
Leverage (j)	0.61 (2.05)	0.60 (2.06)	0.69 (2.09)	0.51 (2.10)	0.59 (2.12)	0.80 (2.11)	0.83 (2.06)	0.93 (2.10)
Firm age (j)	-0.96 (0.84)	-0.95 (0.85)	-1.05 (0.87)	-0.86 (0.87)	-0.96 (0.89)	-1.15 (0.87)	-1.02 (0.86)	-1.22 (0.87)
ROA (j)	-3.95 (2.51)	-4.00 (2.55)	-3.63 (2.61)	-4.29 (2.73)	-3.92 (2.78)	-4.28 (2.63)	-4.26 (2.56)	-4.36 (2.65)
Network openness difference (absolute)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.00 (0.01)
Ownership power imbalance (absolute)		-0.01 (0.03)	-0.41* (0.19)	-0.01 (0.03)	-0.40* (0.19)			
Repeated ties	0.07 (0.86)	0.07 (0.86)	-0.01 (0.88)	0.11 (0.87)	0.03 (0.89)	0.02 (0.87)	0.09 (0.88)	0.07 (0.89)
Repeated ties × Ownership power imbalance			0.40* (0.19)		0.40* (0.19)			
Network openness				-0.24 (2.10)	-0.23 (2.11)			
Network openness × Ownership power imbalance				-2.53+ (1.32)	-2.49+ (1.33)			
Ownership power imbalance (i-j)						-0.03 (0.04)	-0.04 (0.04)	-0.04 (0.04)
Institutional status power imbalance (i-j)						-0.15 (0.14)		-0.14 (0.14)
Institutional status power imbalance × Ownership power imbalance						0.01 (0.01)		0.00 (0.01)
Network status power imbalance (i-j)							-4.69 (2.91)	-4.57 (3.02)
Network status power imbalance × Ownership power imbalance							0.61* (0.27)	0.64* (0.32)
Constant	-2.55 (4.12)	-2.51 (4.12)	-2.47 (4.12)	-2.80 (4.32)	-2.75 (4.33)	-2.37 (4.09)	-2.34 (4.09)	-2.03 (4.06)
Year effects	Included							
F	1.86*	1.77*	2.72***	2.18**	2.83***	1.65+	2.07**	2.02**
R-squared	0.1289	0.1291	0.1361	0.1356	0.1424	0.1402	0.1481	0.1546

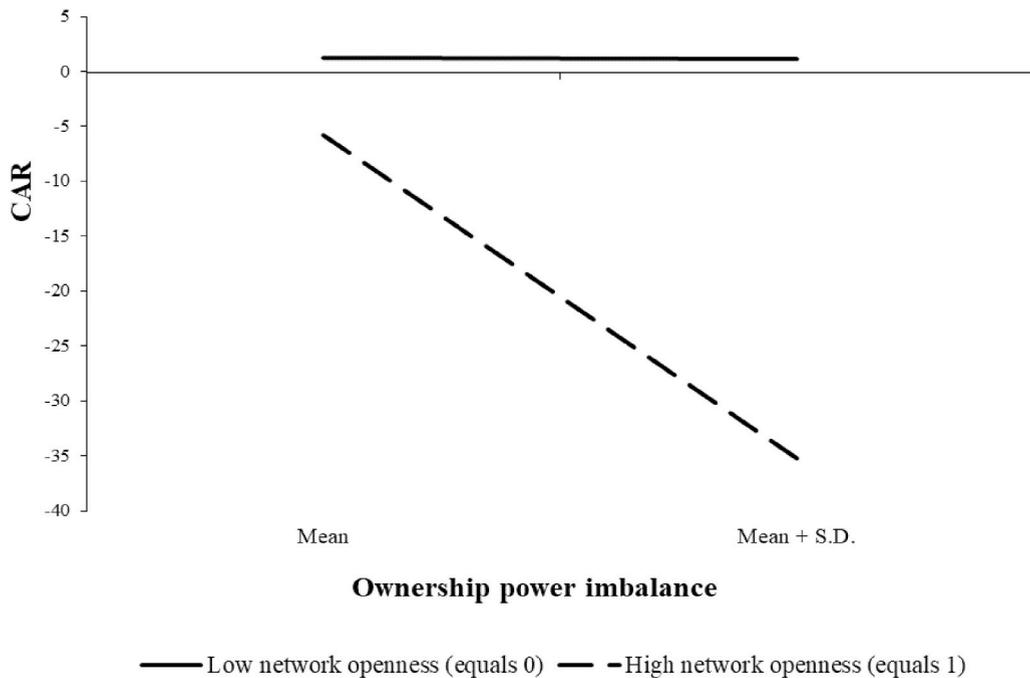
Robust standard errors are in parentheses. + $p < 0.10$ ; \* $p < 0.05$ ; \*\* $p < 0.01$  (two-tailed tests). <sup>a</sup> Rescaled.

and even advantageous when partner firms in a JV have more repeated ties. In contrast, Fig. 3 illustrates that when partner firms are embedded in more open interfirm networks, the relationship between ownership power imbalance and value creation may become more negative (although this hypothesis receives only partial support). To illustrate the significant moderating effect of repeated ties further in the context of our sample, an increase of ownership power imbalance (absolute) from the mean value minus the standard deviation to the mean value plus the standard deviation (an increase of 11.6 percent) leads, on average, to a decrease of CAR by 4 percent when there are no repeated ties between JV partners. However, the same increase in ownership power imbalance leads, on average, to an increase of CAR by 4.5 percent if there are two repeated ties between JV partners.

Models 6–7 analyze the interaction between the *directional* ownership power imbalance and status power imbalances. Hypothesis 4 states that institutional status power imbalance will positively moderate the relationship between ownership power imbalance and value creation. The coefficient for the interaction between institutional status power imbalance and ownership power imbalance is positive, but not significant in Model 6 ( $b = 0.01, p = 0.12$ ). Hypothesis 5 predicts that network status power imbalance will positively moderate the relationship between ownership power imbalance and value creation. The coefficient for the interaction between network status power imbalance and ownership power imbalance is positive and significant in Model 7 ( $b = 0.61, p < 0.05$ ), providing



**Fig. 2.** Interaction between ownership power imbalance (absolute) and repeated ties in predicting JV CAR.



**Fig. 3.** Interaction between ownership power imbalance (absolute) and network openness in predicting JV CAR.

support for [Hypothesis 5](#). The positive coefficient indicates that for a one-unit increase in network status difference (network centrality score) between firm  $i$  and firm  $j$ , the slope relating directional ownership power imbalance and value creation increases by 0.61, weakening the negative relationship.

In Model 8, which includes both interaction effects, the coefficient for the interaction between network status power imbalance and

ownership power imbalance remains positive and significant ( $b = 0.64, p < 0.05$ ), while the coefficient for the interaction between institutional status power imbalance and ownership power imbalance is positive but not significant ( $b = 0.01, p = 0.13$ ). Thus, [Hypothesis 5](#) is supported, while [Hypothesis 4](#) is not. The interaction effect described in [Hypothesis 5](#) is illustrated by the interaction plot (see [Fig. 4](#)). The higher difference in ownership between one partner firm (firm  $i$ ) in a JV and the other partner (firm  $j$ ) in favor of firm  $i$  will be more positively related to value creation when there is also a higher difference in network status in favor of firm  $i$ . In other words, ownership power imbalance may be less detrimental (or even advantageous) for value creation if there is also network status power imbalance in the same direction. To illustrate the significant moderating effect of network status power imbalance further in the context of our sample, we look at the values of directional ownership power imbalance. An increase in directional ownership power imbalance in favor of firm  $i$  by 23.8 percent of equity (the mean value minus the standard deviation to the mean value plus the standard deviation) leads, on average, to a decrease in CAR by 3 percent when the network status (network centrality score) of firm  $i$  is 0.14 lower than the network status of firm  $j$ . However, when firm  $i$  has the network status advantage of 0.14 over firm  $j$ , such an increase in directional ownership power imbalance leads, on average, to a 1.1 percent increase in CAR.

### Robustness checks

We conducted three sets of robustness checks. First, status power imbalance may be endogenous to value creation, as firms may purposefully choose to initiate a JV with a partner of significantly higher or lower status. This may introduce a bias in the estimated effects of status variables. To address the endogeneity issue, we performed additional analysis by running a two-stage least squares (2SLS) model with the hypothesized interactions between ownership power imbalance, institutional status power imbalance, and network status power imbalance. As an instrument for institutional and network status power imbalance, we used relative alliance experience within the last five years, which is a modification of one of our control variables.<sup>4</sup> This ratio depicts the advantage/disadvantage of one of the partners (firm  $i$ ) over the other (firm  $j$ ) in terms of general alliance experience.

Our choice of this instrument is guided primarily by theoretical considerations regarding the relationship between alliance experience and the ability to benefit from the governance structure in an alliance. Prior research suggests that alliance experience is likely to influence the ability of a firm to manage collaborative relationships and thus benefit from them ([Anand and Khanna, 2000](#); [Lee et al., 2015](#); [Liu and Ravichandran, 2015](#)). In addition, relative alliance experience is significantly correlated with institutional status power imbalance ( $r = 0.25, p < 0.05$ ) and network status power imbalance ( $r = 0.33, p < 0.05$ ), but not with value creation ( $r = -0.06, n. s.$ ). The results of the 2SLS estimation were consistent with our results for both institutional and network status power imbalances. The Durbin-Wu-Hausman test further suggests that both institutional status power imbalance and network status power imbalance can be treated as exogenous ( $p = 0.74$  and  $0.76$ , respectively).

Second, ownership power imbalance may be caused by status power imbalance, with a higher-status JV partner manipulating ownership in its favor. To test for such a possibility, we regressed directional ownership power imbalance on institutional status power imbalance and network status power imbalance lagged by one year. We found no significant relationship between the status power imbalances and directional ownership power imbalance. Additionally, the pairwise correlations between the status power imbalances and ownership power imbalance (both directional and absolute) are small and not statistically significant (see [Table 1](#)), which further suggests that ownership power imbalance is generally independent of the status power imbalances.

Third, we included different network variables that may influence value creation as an outcome of power imbalance. Specifically, as additional controls, we focused on three measures of network centrality—betweenness centrality, closeness centrality, and degree centrality scores of both partner firms in a JV ([Freeman, 1979](#)). This inclusion did not significantly change the results. Finally, we also specified an alternative estimation period for CAR as  $[-250, -10]$  ([Gulati et al., 2009](#); [Koh and Venkatraman, 1991](#)) and obtained similar results.

## Discussion

### Contributions

Overall, two contributions emerge. First, we contribute to the literature on strategic alliances by showing that the influence of distribution of ownership control in a JV—ownership power imbalance—on JV value creation should not be considered in isolation, but rather as contingent on relational factors in a JV. Our findings show that the distribution of equity between JV partners optimal for value creation may depend on whether they collaborated in the past (repeated ties), the structure of the networks they are embedded in (network openness), and their status or centrality in these networks relative to each other (network status difference). Overall, our findings suggest that power imbalance created by economic mechanisms, such as equity ownership, may not be sufficient to fully explain value creation in a JV. Our findings thus provide important boundary conditions to the relationship between the asymmetrical division of equity within a JV and JV outcomes ([Barden et al., 2005](#); [Steensma and Lyles, 2000](#)).

While prior research has considered how ownership power imbalance and some of these relational factors affect JV outcomes ([Ma et al., 2013](#); [Meschi et al., 2017](#); [Reuer et al., 2002](#); [Saxton, 1997](#)), it has largely overlooked that analyzing ownership without simultaneously accounting for the relationship aspects of a JV may give an incomplete picture of how ownership power imbalance

<sup>4</sup> Since relative experience is used as an instrument, it cannot be included as a control variable. However, we run additional 2SLS regressions with general experience of each partner firm as controls, which does not significantly change the results.

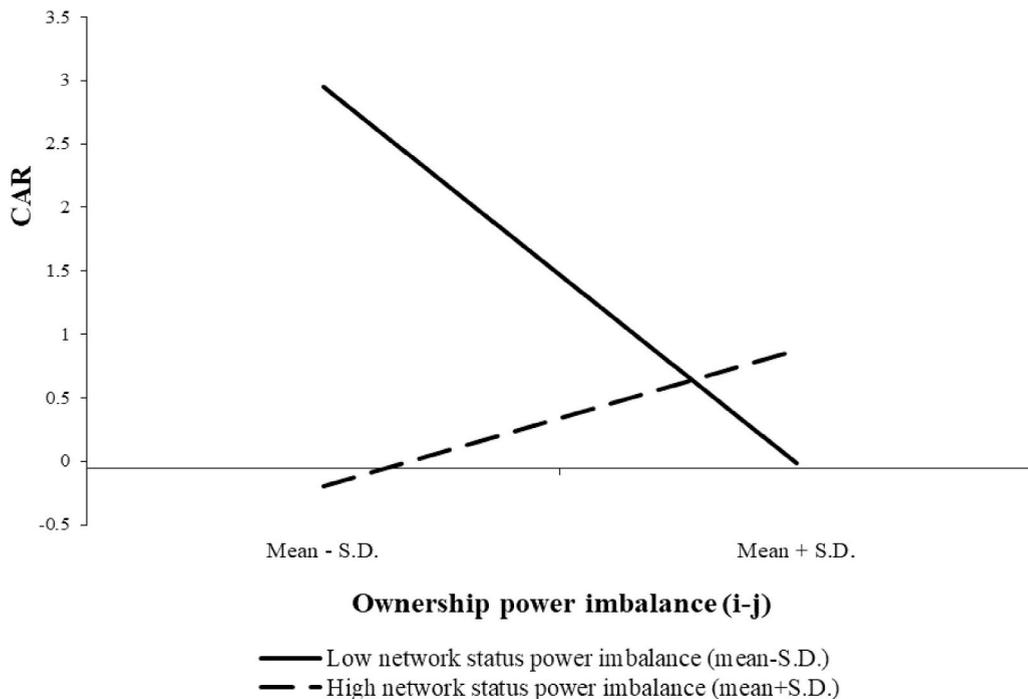


Fig. 4. Interaction between ownership power imbalance (directional) and network status power imbalance in predicting JV CAR.

influences value creation (Madhok, 2006a). That may explain contradictory results in past alliance research, with some work finding a negative effect of ownership power imbalance on cooperation and value creation (Beamish and Banks, 1987; Blodgett, 1992; Saxton, 1997; Steensma and Lyles, 2000) and other work documenting a positive effect (Ding, 1997; Killing, 1983; Mjoen and Tallman, 1997). Our findings thus partially reconcile these contradictory findings in the literature: Both evenly divided ownership and ownership structure dominated by one of the partners may be beneficial for JV value creation, depending on the relational factors on which we focus.

Second, we contribute to research on firm status dealing with status-heterophilous ties. Moving beyond the traditional economic perspective that has mostly focused on resource control as the main base of power imbalance in JV relations, research on status-heterophilous ties has explored social and relational bases of power imbalance (Castellucci and Ertug, 2010; Piazza and Castellucci, 2014; Podolny and Phillips, 1996). Extending this research, we suggest examining two dimensions of status gaps between firms—(1) institutional status shaped by hierarchical categorization and ranking by the society and (2) network status shaped by interaction within the network. Our findings indicate that network status power imbalance is another important relational factor that may moderate the relationship between ownership power imbalance and value creation. Specifically, the overall value creation may be higher in JVs where a partner firm with higher equity ownership also tends to have higher network status, compared to JVs with more equal network status distribution. Institutional status power imbalance, however, does not seem to have such a moderating effect. These findings suggest that ownership power imbalance needs to be *jointly* considered with status power imbalances, and that benefits of status-heterophilous ties may be more comprehensively assessed when the ownership structure and different status dimensions are accounted for.

Our findings can thus partially reconcile status homophily arguments and some empirical evidence that suggests performance benefits of status-heterophilous ties (Benjamin and Podolny, 1999; Castellucci and Ertug, 2010; Collet and Philippe, 2014; Cowen, 2012). Prior research has noted the influence of either economic-based power imbalance (ownership) or social-based and relational-based power imbalance (status) (Adegbesan and Higgins, 2010; Blodgett, 1991; Castellucci and Ertug, 2010). We propose that joint consideration for *both* is important. Thus, considering only economic-based power imbalance may omit the important interaction between ownership control and status differences, and focusing on either one or the other may be a limitation (Madhok, 2006b). In sum, status differences between partners may serve as an important boundary condition for the relationship between the division of equity within a JV and value creation. Our findings also suggest that different dimensions of status may not have the same moderating effect.

#### Limitations and future research directions

Our study's first limitation is that there may be other important dimensions of power imbalance besides ownership and status. While ownership largely reflects the resource contribution to a JV, certain resources (especially intangible) may play an important role in the division of power between partner firms. These dimensions may also carry different weights. Future research may thus look at

other potential dimensions (sources) of power imbalance and also explore empirical foundations for assigning different weights. The second limitation stems from using CAR as a measure of value creation, which may not always represent long-term value creation, as it reflects investors' perception of a JV future value creation, rather than measuring it directly. The third limitation is the inclusion of only publicly traded (and thus mostly large) firms in our sample. Performance implications of power imbalance may be different for smaller and/or private firms. Future research may look at power imbalance and interfirm ties in contexts that include other types of firms. Finally, we only consider *ex post* implications of power imbalance in JV relations, but not *ex ante* factors that influence firms' decisions to initiate such ties (Jensen, 2008). These factors themselves may be tied to performance considerations, such as adaptation (Jiang et al., 2017), aspiration-performance gaps (Shipilov et al., 2011), or the possibility of alliance termination (Min, 2017; Peng and Shenkar, 2002). Exploring these aspects may be another fascinating direction for future research.

## Conclusion

JVs often entail imbalance of power between partner firms. This study goes beyond traditional economic-based explanation to suggest that because power is affected by relations, implications of power imbalance for JV value creation are not always straightforward. We have taken a step towards a more comprehensive understanding of the consequences of power imbalance in JVs, focusing on repeated ties, network structures, and status dimensions, jointly considered with ownership power imbalance. In conclusion, a focus on power imbalance can reveal significant—and previously overlooked—implications for value creation in a JV.

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## Appendix A. Supplementary data

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