

STRUCTURAL POWER, CORPORATE STRATEGY, AND PERFORMANCE

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Research Summary:

We develop a structural theory of power to explain how an organization is indirectly influenced by others through intermediaries. Our theory begins by explaining why an organization can improve its power position by acquiring partners that have direct advantages over it. We then propose the construct of indirect disadvantage to explain why an organization is motivated to acquire other partners that have advantages over its powerful partners. We further predict that the organization is motivated to acquire non-partners to gain two-step leverage over powerful partners. Finally, we theorize that the total indirect disadvantage of an organization relative to all partners negatively influences its performance. Using an extensive dataset on American businesses (1997-2007), we find strong support for our theory at both industry-industry and firm-industry levels.

Managerial Summary:

Powerful buyers and suppliers are major influencers of the bottom line. This study develops a new theory to explain how to deal with them effectively, especially through mergers and acquisitions. In addition to considering powerful exchange partners as acquisition targets, firms can seek to exercise indirect influence over them through others. Acquiring other partners or non-partners that have control over powerful buyers and suppliers is often feasible and effective in dealing with those organizations and improving the firm's financial position. Our analysis of a very large sample of American businesses over a decade not only provides clear evidence that supports our theory but also highlights the substantial competitive advantages enjoyed by firms that exercise indirect sources of influence over major exchange partners.

Power has long been a central construct in organization theory and research. Organizational power is typically theorized to be a property of the direct resource exchange relationship between two organizations; an organization is powerful relative to its exchange partner to the extent that the exchange partner depends on it for critical resources and has few alternatives to choose from (Blau, 1964; Casciaro & Piskorski, 2005; Emerson, 1962; Finkelstein, 1997; Gulati & Sytch, 2007; Katila, Rosenberger, & Eisenhardt, 2008; Molm, 1990; Xia & Li, 2013). Because organizations are open systems that depend on the external environment for critical resources, an organization's power relative to resource exchange partners plays a critical role in influencing major corporate strategies and performance outcomes (Burt, 1992; Finkelstein, 1997; Pfeffer & Salancik, 1978; Porter, 2008). Research shows that organizations seek to improve their power position relative to exchange partners through various types of major corporate decisions, including acquisitions (Casciaro & Piskorski, 2005; Finkelstein, 1997; Rogan & Greve, 2014), alliances and joint ventures (Ahuja, Polidoro, & Mitchell, 2009), interlocking directorships (Burt, 1983; Westphal, Boivie, & Chng, 2006), and executive successions (see review by Hillman, Withers, & Collins, 2009). In addition, organizations that more effectively manage external power and resource dependence relations tend to survive longer and enjoy superior performance (see reviews by Davis & Cobb, 2010; Wry, Cobb, & Aldrich, 2013).

Despite the central role of power in organization theory and research, it has been conceptualized predominantly as a property of direct resource dependence relationships (Casciaro & Piskorski, 2005; Emerson, 1962; Finkelstein, 1997; Gulati & Sytch, 2007; Katila et

al., 2008; Pfeffer & Salancik, 1978). Because direct relationships are known to be embedded in a network of relationships and indirect ties generally have major impacts on the effects of direct ties (Cook & Emerson, 1978; Molm, 1990; Yamaguchi, 1996), the focus on direct dependence relationships and the relative neglect of indirect or structural power may have left a substantial deficit in our understanding of the sources of interorganizational power. In addition, focusing mainly on direct dependence relationships has led to a major criticism of resource dependence theory: Its core recommendation to manage dependence relationships by acquiring directly advantaged partners can be difficult to implement (Casciaro & Piskorski, 2005; Gargiulo, 1993). Because corporate strategies are influenced by motivations to increase power, by neglecting indirect dependence and power, extant research may have missed relatively feasible strategies for managing interorganizational dependencies. By extension, without fully considering structural sources of power, we will also have an incomplete understanding of the sources of variance in organizational performance.

The present study advances a structural theory of organizational power that addresses these key limitations of existing research on power, corporate strategy, and performance. Specifically, we first use the foundational construct of direct disadvantage (Emerson, 1962; Gulati & Sytch, 2007) to describe the degree to which one actor's power falls below its partner's in a direct exchange relationship. We then develop the construct of indirect disadvantage to explain how an actor can be indirectly influenced by a partner that has advantages over other powerful partners of the actor (i.e., a partner with an indirect advantage over the actor). We propose that the actor

may seek to improve its power position by acquiring partners that possess either direct or indirect advantages over it. Because the actor may have limited abilities to acquire directly advantaged partners (Casciaro & Piskorski, 2005), our theory emphasizes that acquiring partners that possess indirect advantages can be an especially important means of improving power position—these acquisitions not only eliminate the actor’s indirect disadvantages but also neutralize its direct disadvantages relative to other partners that are under the influence of these acquisition targets.

While our theory of indirect disadvantage suggests that an actor can neutralize its direct disadvantage relative to partners by acquiring other *partners* that have advantages over them, we build on two-step leverage theory (Gargiulo, 1993) to suggest that an actor can also neutralize its direct disadvantages relative to partners by acquiring *non-partners* that have advantages over these powerful partners—that is, non-partners that would allow the exercise of two-step leverage (Gargiulo, 1993). Research by Gargiulo and colleagues (Bae & Gargiulo, 2004; Gargiulo, 1993) has considered how actors can achieve two-step leverage over partners by forming a social or alliance tie with (i.e., coopting) a powerful non-partner. We extend this theory by suggesting that actors can also achieve two-step leverage over partners by *acquiring* non-partners that have advantages over these partners. In considering how the indirect advantages of partners and the motivation to gain two-step leverage through non-partners can both influence an actor’s acquisition behavior, this study examines the full range of structural options available to an actor when it seeks to improve its power position through acquisitions. Moreover, we explain why the

total indirect disadvantage of an actor relative to all exchange partners is an important, negative influence on its financial performance.

We test our theoretical predictions at the industry–industry and firm–industry levels, using a large sample of American industries and corporations between 1997 and 2007. We further provide corroborative evidence for our theory at the firm–firm level using original survey data from several hundred top executives. Our findings provide strong support for this structural theory of power, corporate strategy, and competitive advantage, and are robust to alternative measures of key constructs, models of estimation, levels of analysis, and the inclusion of controls for many alternative explanations.

This study makes important contributions to research on resource dependence and power. Although modern corporations are embedded in complicated and interconnected networks of supplier–buyer relationships (Galaskiewicz, 2011), extant theories of power and dependence have focused predominantly on an organization’s direct resource dependence relationships with others (Blau, 1964; Casciaro & Piskorski, 2005; Cook & Emerson, 1978; Finkelstein, 1997; Gulati & Sytch, 2007; Pfeffer & Salancik, 1978). This focus on direct dependence relationships has neglected indirect or structural sources of power and has led to the common critique that managing interdependence through acquisition is often infeasible. In developing the construct of indirect disadvantage, this study introduces an unstudied and prevalent source of structural power: Our data show that nearly one third of direct exchange relationships in the United States were embedded in cyclic triads in which indirect exchange relationships were significant.

Moreover, our study shows that an actor can neutralize its direct disadvantage relative to a partner by acquiring other partners (i.e., those with indirect advantages over the actor) or non-partners (i.e., those that allow two-step leverage over the partner) that have direct advantages over the partner. These two structural approaches to managing dependence relationships are not only previously unstudied, but also potentially more feasible than acquiring directly advantaged partners.

Our study also advances the theory of two-step leverage developed by Gargiulo (1993). The theory suggests that an actor can neutralize its direct disadvantage relative to a partner by coopting (i.e., forming a social or political tie or alliance with) a non-partner that has power over that partner (Bae and Gargiulo, 2004; Gargiulo, 1993). We propose that the actor can also achieve two-step leverage by acquiring (vs. coopting) the non-partner. To the extent that acquiring non-partners allows an actor to fully control them, our study suggests that acquisition is a strong and unstudied means of achieving two-step leverage.

In addition, our study contributes to strategic management research by proposing and testing three novel factors that influence acquisition decisions and by advancing a novel social structural perspective on the sources of superior performance. Prior studies of acquisitions have focused on direct resource dependence (Finkelstein, 1997; Pfeffer & Salancik, 1978), power imbalance, or mutual dependence (Casciaro & Piskorski, 2005), but have not examined the effects of direct or indirect disadvantages or two-step leverage. Because the constructs of power imbalance and mutual dependence are nondirectional, our directional constructs of direct and

indirect disadvantages and two-step leverage can explain which party is motivated to initiate acquisitions and hence advance our understanding about how resource dependence relationships influence corporate strategy. Perhaps most importantly, our structural approach to examining power and dependence relationships considers the full range of approaches available to an actor, including but not limited to the acquisition of direct exchange partners, when it seeks to improve its power position. In explaining why an actor's total indirect disadvantage relative to all partners is a key, negative influence on performance, our study also offers a fresh social structural perspective on the sources of performance differences.

A THEORY OF STRUCTURAL POWER

Power, Dependence, and Direct Disadvantage

An organization has *power* over a resource exchange partner (e.g., buyer or supplier) to the extent that the partner depends on the organization for critical resources and has few alternatives to choose from (Emerson, 1962; Pfeffer & Salancik, 1978). The partner can also have power over the organization to the extent that it provides critical resources to the organization and the organization has few alternatives to choose from (Porter, 2008). When an organization and its partner have the same degree of power over (or resource dependence on) each other, their exchange relationship is balanced. In contrast, when one has more power over (or less resource dependence on) the other, their exchange relationship reflects a degree of *power imbalance* (Casciaro & Piskorski, 2005). When an organization's power exceeds its partner's based on their

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direct resource exchange relationship, the organization is in a position of *relative power* or *power advantage* (Emerson, 1962; Gulati & Sytch, 2007). Because we seek to develop a theory of indirect advantage, we use *direct advantage* to describe relative power and power advantage, as defined above. *Direct disadvantage* is simply the opposite of direct advantage.

Indirect Disadvantage

We define an intermediary as a common exchange partner of two actors. The *indirect disadvantage* of an actor relative to a partner can then be defined as the combination of the actor's direct disadvantages relative to intermediaries (i.e., common partners of both) and those intermediaries' direct disadvantages relative to the partner. It is important to note that an actor's indirect disadvantage relative to a partner exists under three conditions: 1) The actor has direct disadvantages relative to intermediaries, 2) intermediaries have direct disadvantages relative to the partner, and 3) the partner and the actor have significant direct exchange relations with each other. Figure 1a illustrates actor A's indirect disadvantage relative to partner P through an intermediary I. In this figure, A has a direct disadvantage relative to I, I has a direct disadvantage relative to P, and P and A are significant exchange partners with each other; either A or P can have the direct advantage. A will not be indirectly influenced by P if A does not have a direct disadvantage relative to I or if I does not have a direct disadvantage relative to P. In addition, the indirect disadvantage of A relative to P will bring benefits to P only when it is a significant partner of A. As we will explain in more detail below, a significant partner can exercise its

indirect influence to obtain favorable exchange terms from the actor regardless of whether the actor or the partner has a direct advantage, but an insignificant partner cannot benefit from exercising its indirect influence over the actor. In this sense, indirect advantages and disadvantages exist only between significant partners that are connected through intermediaries.

=====Insert Figures 1a and 1b about here=====

Indirect disadvantage is related to but quite different from two-step leverage. As illustrated in Figure 1b, the two-step leverage theory (Gargiulo, 1993) assumes that an actor has a direct disadvantage relative to a partner that is under the influence of a *non-partner*. The theory suggests that the actor can neutralize its direct disadvantage relative to the partner by forming a new social or political tie with the non-partner (the social or political tie is shown by the dashed line in the figure). The social or political tie with the non-partner allows the actor to exercise two-step leverage over the advantaged partner, improving the actor's power position relative to the partner. A key tenet of this theory is that an actor can improve its power position by coopting *non-partners* that have leverage over powerful partners. As emphasized by Gargiulo (1993, p. 6) "Indirect leverage requires that cooptive ties occur between actors who are separated by two steps in the dependence network" (that is, one step from the actor to the partner and one step from the partner to the non-partner). It is worth noting that although our theory of indirect disadvantage and the two-step leverage are both about indirect dependence relationships in a triad, these two theories were developed with different purposes and different actors at the center. The indirect disadvantage theory concerns how a significant partner, with or without a

direct advantage, can exercise indirect power over the focal actor through other powerful partners of the actor. In contrast, the two-step leverage theory addresses an actor's direct disadvantage relative to a partner and focuses on how to neutralize that disadvantage by forming a new social or political tie with a non-partner.

When an actor (A), intermediaries (I), and a significant partner (P) of the actor are in a cyclic relationship as specified in the three conditions above and illustrated in Figure 1a, we expect that P will be able to exercise indirect advantages over A and negotiate more favorable exchange terms with A. P may exercise its indirect advantage over A by exercising its direct advantage over intermediaries and pressuring them to limit A's access to resources under their control. Research on power and resource dependence has long suggested that an organization can exercise its direct advantage by potentially influencing a partner's access to important resources under its control (Burt, 1992; Pfeffer & Salancik, 1978; Westphal et al., 2006). In the context of buyer–supplier relations, for example, a powerful supplier can influence a buyer's access to an important input by limiting the amount of input supplied or influencing the price of the input or through other means (Gulati & Sytch, 2007; Porter, 2008).

P can make intermediaries comply with its request to limit A's access to their resources to the extent that it has direct advantages over these intermediaries. Resource dependence theory suggests that organizations tend to comply with the demands of powerful resource providers to secure access to important resources under their control (Casciaro & Piskorski, 2005; Gulati & Sytch, 2007; Pfeffer & Salancik, 1978). When P can exercise direct advantages over

intermediaries, which can in turn exercise direct advantages over A, P can request that intermediaries limit A's access to their resources and inform A that such a limitation may be removed if A offers P better exchange terms. A can be expected to comply with this request to the extent that P has significant sources of influence over intermediaries and these intermediaries have significant sources of influence over A. Thus, P's indirect advantage over A is determined by P's direct advantages over intermediaries and these intermediaries' direct advantages over A. While indirect advantage exercised in this way weakens exponentially with the decrease in each actor's advantage over the other, it is quite common when P and intermediaries have major influence in their industries.

For example, electronic component manufacturers have clear advantages over distributors (the top 10 manufacturers provide about 80% of components to distributors); distributors in turn have advantages over large original equipment manufacturers (OEMs) (in part because OEMs depend on them for value-added services). Although component manufacturers face significant direct disadvantages relative to large OEMs, which account for about 70% of component manufacturers' sales, Narayandas (2007) described how component manufacturers can often exercise indirect advantages over OEMs by influencing their access to products and services offered by distributors, including which distributor is allowed to sell what products to which OEM in which price range.

Although occasionally P may indeed need to fully exercise its direct advantages over intermediaries and pressure them to fully exercise direct advantages over A, P does not need to

do so every time it negotiates exchange terms with A. Research suggests that occasional demonstrations of power are often sufficient to create a credible threat to exchange partners (Cook & Emerson, 1978; Molm, 1990). Therefore, P may even negotiate desirable exchange terms with A without involving intermediaries at all so long as A believes in P's ability to influence its access to important resources under the control of intermediaries. P can also exercise its indirect advantage over A through communication ties that tend to develop among buyers and suppliers (Westphal *et al.*, 2006). When a top executive of P asks intermediaries' executives for a favor, for instance, these executives are likely to honor such requests and help P obtain favorable exchange terms from A; A can in turn be expected to honor the requests of these executives and offer P more favorable exchange terms.

POWER DISADVANTAGES AND UNCERTAINTY ABSORPTION

Direct Disadvantage and Acquisition of Exchange Partners

A long tradition of research on resource dependence emphasizes that organizations are motivated to absorb uncertainties created by powerful exchange partners in accessing important resources under their control (Pfeffer & Salancik, 1978; also see review by Hillman *et al.*, 2009). There is evidence that efforts to absorb these uncertainties often lead to improved financial performance and an increased likelihood of survival (Davis & Cobb, 2010; Gulati & Sytch, 2007; Wry *et al.*, 2013). While partial absorption of uncertainty involves forming alliances or joint ventures with powerful partners (Ahuja, Polidoro, & Mitchell, 2009; Bae & Gargiulo, 2004), total absorption

of uncertainty requires an organization to acquire a powerful exchange partner (Casciaro & Piskorski, 2005; Finkelstein, 1997). To the extent that total absorption of uncertainty reflects the most complete response of an organization to its power and dependence disadvantage (Casciaro & Piskorski, 2005; Pfeffer & Salancik, 1978), examining the effect of indirect disadvantage on acquisitions provides the most conservative test of our theory.

Because interdependence (Pfeffer & Salancik, 1978), mutual dependence, and power imbalance (Casciaro & Piskorski, 2005) do not explain which actor in an exchange relationship is less powerful or more motivated to initiate uncertainty absorption strategies, we begin by explaining how the construct of direct disadvantage can better explain these uncertainty absorption strategies. Because prior studies on how resource dependence influences acquisition decisions have typically focused on acquisition likelihood (Casciaro & Piskorski, 2005; Finkelstein, 1997; Pfeffer & Salancik, 1978), we follow this tradition and include acquisition likelihood as a primary outcome of interest. Because acquisition likelihood may not capture the full range of heterogeneity in acquisition activities, we also examine acquisition expenditure as a major outcome of interest.

As discussed earlier, an organization that suffers direct disadvantages depends more on exchange partners for resources than those partners depend on it. Such disadvantages are likely to negatively influence the degree to which the organization can negotiate favorable exchange terms with partners and ultimately harm its performance (Gulati & Sytch, 2007), motivating it to manage its power positions relative to them. Specifically, an organization's direct disadvantages

relative to partners are likely to motivate the organization to fully absorb the uncertainty of accessing resources offered by these partners through acquisitions (Finkelstein, 1997; Pfeffer & Salancik, 1978). While a disadvantaged actor has limited abilities to acquire a directly advantaged partner (Casciaro and Piskorski, 2005), especially if it has only one partner, most organizations have providers of many different types of resources and hold advantages over some of them (Burt, 1983; Finkelstein, 1997; Pfeffer & Salancik, 1978; Westphal et al., 2006). When the disadvantage relative to a given type of resource provider becomes a significant concern, an organization is likely to mobilize resources to acquire that type of resource provider (Finkelstein, 1997; Pfeffer & Salancik, 1978). Research on acquisitions further suggests that an organization's ability to acquire others depends on many factors beyond its dependence relationship with a given type of resource provider, including its size, overall performance, and financial leverage, among other factors (see reviews by Halebian, Devers, McNamara, Carpenter, & Davison, 2009). Holding an organization's ability to acquire partners constant, the greater its direct disadvantage relative to exchange partners, the stronger its motivation to acquire these partners to improve its position and performance, and the more likely it is to acquire them.

In addition, a greater disadvantage relative to partners can motivate an organization to commit more resources to acquiring them. Specifically, a greater disadvantage suggests that partners' resources are more important for the organization and that the organization has fewer alternatives to choose from (Pfeffer & Salancik, 1978). To effectively reduce dependence on these partners, an organization needs to commit more resources to acquiring larger partners—

acquiring smaller partners might not fully meet the organization's demand for the resources (Casciaro & Piskorski, 2005; Finkelstein, 1997). Conversely, when an organization's disadvantage is smaller, committing fewer resources to acquire smaller partners may be enough to meet the organization's need for the resources. Because the percentage of revenue an organization commits to acquiring partners is reflected in its acquisition expenditure (Zhu & Chen, 2015), our arguments suggest that an organization's direct disadvantage positively influences its expenditure in acquiring directly advantaged partners and its likelihood of acquiring them. This leads to our baseline hypothesis:

Hypothesis 1 (H1): *The greater an organization's direct disadvantage relative to exchange partners, a) the more likely it will be to acquire and b) the greater its expenditure will be in acquiring these exchange partners.*

Indirect Disadvantage and Acquisition of Exchange Partners

Our theory of indirect disadvantage concerns the way that an actor's significant partner may exercise indirect power over the actor through the actor's other powerful partners (i.e., intermediaries). We suggested earlier that direct disadvantage only partially reflects an organization's overall power position relative to a significant partner and that an organization's indirect disadvantage can substantially influence its overall power position. We explain below why acquiring a significant partner with an indirect advantage can be an important means of improving an actor's power position.

An organization's (A) indirect disadvantage relative to a significant partner (P) creates uncertainty about whether the partner will indirectly influence its access to important resources

controlled by intermediaries (I). As discussed above, P can make intermediaries comply with its request to limit A's access to their resources to the extent that it has direct advantages over these intermediaries—intermediaries tend to comply with the demands of such a powerful resource provider to secure access to important resources under its control (Casciaro & Piskorski, 2005; Gulati & Sytch, 2007; Pfeffer & Salancik, 1978). Because A depends on intermediaries for access to important resources, P's indirect advantage over A allows it to create considerable uncertainty about A's access to intermediaries' resources, and P is motivated to demonstrate this ability in order to negotiate more favorable exchange terms with A. P may occasionally choose to fully exercise its direct advantages over intermediaries and make A aware that its access to intermediaries' resources can be interrupted by P (Cook & Emerson, 1978; Molm, 1990); P may also ask intermediaries' executives for a favor to help it negotiate favorable exchange terms from A. Either way, A can be expected to comply with P's request and offer P more favorable exchange terms.

Acquiring a significant partner that has an indirect advantage will enable the organization to completely absorb the resource uncertainty created by this partner (Finkelstein, 1997; Pfeffer & Salancik, 1978), allowing the organization to immediately eliminate a disadvantageous relationship and potentially improve its performance. In addition, such an acquisition allows the organization to inherit the target's direct advantages over intermediaries, thus counterbalancing its current direct disadvantages in relation to them. This is consistent with recent research on acquisitions, which shows that firms often acquire targets to improve positions in

interorganizational networks (Hernandez & Menon, 2018; Hernandez & Shaver, 2019). We suggest that overcoming indirect disadvantage is an important and unstudied motivation for corporate acquisitions. Building on our arguments above, we expect that an organization's indirect disadvantage relative to its significant partners will increase not only its likelihood to acquire these partners but its acquisition expenditure. Thus:

Hypothesis 2 (H2): *The greater an organization's indirect disadvantage relative to its exchange partners, a) the more likely it will be to acquire and b) the greater its expenditure will be in acquiring these exchange partners.*

Motivation to Gain Two-Step Leverage and Acquisition of Non-Partners

Our arguments above suggest that an organization is motivated to eliminate its direct disadvantage relative to a partner by acquiring it. In addition, the organization is motivated to acquire a partner with an indirect advantage to eliminate its current indirect disadvantage. By acquiring the partner with an indirect advantage, the organization also inevitably inherits the partner's direct advantages over intermediaries, neutralizing the organization's direct disadvantages relative to them. Although these arguments highlight that acquiring partners with indirect advantages results in two types of benefit (i.e., eliminating an indirect disadvantage and neutralizing direct disadvantages relative to intermediaries) and hence is especially important for improving an organization's overall power position, we have not considered the possibility that the organization can also neutralize its direct disadvantages relative to partners by acquiring non-partners that have influence over these partners. As discussed above, our theory of indirect disadvantage requires that the acquisition target with an indirect advantage must be a significant

partner of the focal organization—by definition, a non-partner cannot have an indirect advantage over the focal organization because it cannot benefit from exercising the indirect influence. We build on the two-step leverage theory below to examine this unexplored possibility, analyzing the full range of structural options available to a disadvantaged organization.

Specifically, the two-step leverage theory (Gargiulo, 1993) suggests that an organization can neutralize its direct disadvantage relative to a partner by forming a social or political tie with a non-partner that has a direct advantage over the partner. Bae and Gargiulo (2004) further suggest that an organization can form a strategic alliance (in addition to forming a social or political tie) with a non-exchange partner to gain two-step leverage over a powerful partner and neutralize its direct disadvantage. Building on this stream of research, we propose that a stronger means of achieving two-step leverage over a powerful partner can be *acquiring* a non-partner that has a direct advantage over the partner. Research on resource dependence has long suggested that acquisitions represent a stronger form of action than forming alliances or social ties in efforts to manager dependence relationships (Casciaro & Piskorski, 2005; Finkelstein, 1997; Pfeffer & Salancik, 1978). When an organization faces a direct disadvantage relative to a partner, it should be motivated to acquire a non-partner that has a direct advantage over the partner to neutralize its direct disadvantage; such an action allows the organization to gain a relatively strong form of two-step leverage over the partner. The greater an organization's direct disadvantage relative to a partner and the greater the partner's direct disadvantage relative to a non-partner, the stronger the organization's motivation to acquire the non-partner to gain two-

step leverage over the advantaged partner. Building on our arguments above, we expect that an organization's motivation to gain two-step leverage over a partner will increase not only its likelihood to acquire the non-partner but also its acquisition expenditure.

Hypothesis 3 (H3): *The greater an organization's direct disadvantage relative to an exchange partner and the greater the partner's direct disadvantage relative to non-partners of the organization, a) the more likely the organization will be to acquire and b) the greater its expenditure will be in acquiring those non-partners.*

TOTAL INDIRECT DISADVANTAGE AND INFERIOR PERFORMANCE

Burt (1983) suggested that the aggregation of an industry's interdependencies on all other industries can reflect its autonomy and predict the profitability of the industry. Porter (2008) similarly argued that the direct power of an industry relative to its key constituents is a fundamental source of superior industry profitability. Gulati and Sytch (2007) suggested that a manufacturer's dependence disadvantage can negatively influence its performance in a dyadic relationship with a supplier. Because our arguments above suggest that an organization's indirect disadvantage relative to a partner reduces its ability to negotiate desirable exchange terms with the partner and potentially harms its profitability, we explain below why the total indirect disadvantage relative to all partners is an important factor that can negatively influence an organization's overall performance.

As discussed above, a significant partner is able to exercise its indirect advantage over an organization without having to fully exercise its direct advantage over intermediaries. The partner is better able to negotiate favorable exchange terms with the organization to the extent

that the organization believes in the partner's ability to indirectly constrain its access to important resources from intermediaries. Moreover, the partner can exercise its indirect advantage over the organization without having to fully exercise its direct advantage over intermediaries in every instance—it needs only to make the organization believe that it has the ability to disrupt the organization's operations and occasionally offer a demonstration to bolster its credibility. Over time such demonstrations will convince the organization that it is important to comply with the partner's requests, resulting in reduced profitability of the organization. To the degree that an organization's overall indirect (in addition to direct) disadvantage relative to all exchange partners reflects its overall inability to negotiate desirable exchange terms with partners, we expect the overall indirect disadvantage of an organization to negatively influence its financial performance.

Hypothesis 4 (H4): *The greater an organization's total indirect disadvantage relative to all exchange partners, the worse its financial performance.*

METHOD

Traditionally, resource dependence has been studied predominantly at the industry–industry level (see reviews by Davis & Cobb, 2010; Hillman et al., 2009; Wry et al., 2013). Because most studies on resource dependence have focused on interindustry mergers and acquisitions, we followed this tradition and analyzed how direct and indirect disadvantages and the motivation to gain two-step leverage influence interindustry acquisitions and industry profitability. Details of

this analysis are reported in Appendix A. The results in Tables A1 and A2 provide strong support for all our hypotheses.

In addition, we propose that theories about resource dependence and power can and should be tested at the firm–industry level in addition to the industry–industry level. Pfeffer and Salancik (1978, p. 51) explicitly stated that “dependence can then be defined as the product of the importance of a given input or output to the organization and the extent to which it is controlled by a relatively few organizations.” This classic definition of resource dependence suggests that it describes how a firm relates to providers of a given resource. Because providers of the same type (or bundle) of resource are typically from the same industry (e.g., Amit & Schoemaker, 1993; Grant, 1991), we can test theories about dependence and power at the firm–industry level when analyzing a firm’s relations with providers of a given resource. It is worth noting that although our theory can be further applied to explain phenomena at the firm–firm level, it is not our intention to do so in this study.

Data and Sample

The U.S. Bureau of Economic Analysis (BEA) started using the North American Industry Classification (NAIC) codes to replace the Standard Industrial Classification (SIC) codes in 1997. We obtained input-output tables from BEA for 1997, 2002, and 2007, using the six-digit input-output (IO) accounts to get the most refined interindustry resource exchange data available (refined exchange data were available only every five years). BEA matches IO accounts to NAIC

codes, explaining that each IO-based industry includes economic activities that are based on the same method of production.¹ In other words, firms in each IO-based industry are assumed by BEA to have the same production function, using the same pattern of input for production. The input-output tables detail the resource exchange relationships among IO accounts.² We hereafter use the word *industry* to refer to a six-digit IO account, unless noted otherwise.

We obtained the concentration ratio for each NAIC code from the Census Bureau's website. For a small number of NAIC codes with missing information, we used Compustat's segment-level data as an alternative source of information. We also used the segment-level data to calculate a given firm's market share in a given NAIC code and in a given IO account. Acquisition data were from SDC Platinum. We used the six-digit CUSIP numbers to identify the acquirer and the target, and excluded from our final sample all mergers, identified by the variable *mergers of equals flag* in SDC. SDC includes all deals involving a purchase of at least a 5% stake in the target. We followed prior studies (Casciaro & Piskorski, 2005; Finkelstein, 1997) and included all those acquisitions in our analysis unless they were uncompleted or with a deal value of less than \$1 million. Other information was collected from Compustat. Our final sample sizes for analyzing the likelihood of acquiring partners and non-partners were 27,990 and

¹ IO accounts that start with 23, 1113, and 531 were aggregated into three groups to better match NAIC codes. For special IO accounts that start with S, V, and F, we considered only their direct contributions to other industries' buying and selling activities rather than their acquisitions because these IO codes do not correspond to any NAIC codes. Excluding these special IO accounts, our study included 623 IO accounts.

² It is worth noting that the final consumption accounts included import and export activities related to each industry. Thus, the resource dependence relationships between any two industries in our sample were operationalized in ways that considered the influence of foreign exchange partners.

1,869,198, respectively. The sample sizes for analyzing the expenditure in acquiring partners and non-partners were 858 and 3,940, respectively.

Dependent Variables

We measured the likelihood that a firm would acquire businesses in industry j (*acquisition likelihood*) as 1 if the firm conducted at least one acquisition in industry j between years t and $t+4$, inclusive, and 0 otherwise. To measure a firm's *acquisition expenditure* in industry j , we first calculated the total deal value of all acquisitions the firm conducted in industry j in a given year divided by its total sales (Zhu & Chen, 2015). We then used the average value of the above ratio during years t to $t+4$ as our final measure of acquisition expenditure.

Our theory predicts that a firm will acquire existing partners that have direct or indirect advantages over it and non-partners that have direct advantages over its powerful partners. We calculated the likelihood and expenditure of acquiring partners and non-partners in the same way, as described above. We identified industry j as a significant partner industry of a firm if the absolute value of industry j 's direct disadvantage relative to the firm was greater than a threshold (the measurement of direct disadvantage is described in detail on the following page). In our primary analysis, we used 0.01 as the threshold. Among firm–industry pairs that had any exchanges, the average value of direct disadvantage was 0.0012, and the standard deviation was 0.0083. Thus, 0.01 was about one standard deviation above the average level of direct advantage among any exchange partners. Because the maximum value of direct advantage was more than

75 standard deviations above the mean, using one standard deviation above the mean to identify a significant partner among all partners was a very conservative approach—it assumed that a partner that was one seventy-fifth as important as the most important partner was still considered a significant partner. In additional analyses, we also used 0.02 and 0.1 as alternative thresholds and obtained highly consistent results.

Firm performance was measured by industry-adjusted return on assets (ROA), calculated as a firm's ROA in year t minus the average ROA of the firm's primary industry in the same year. Because the distribution of this variable was highly skewed, we used the *lnskew0* command in Stata and transformed the values (Casciaro & Piskorski, 2005). The final measure equals $\log(\text{ROA} + 1045.04)$. In an additional analysis, we also used the simple log transformation of ROA as an alternative measure of firm performance and obtained consistent findings.

Independent Variables

We first identified all the industries a firm α was involved with (e.g., industries i_1, i_2, \dots, i_m , where m represents the number of industries involved). For each of these industries (industry i), we calculated firm α 's *direct disadvantage* relative to firms in industry j as firm α 's dependence on industry j ($C_{j \rightarrow i_\alpha}$) minus the dependence of firms in industry j on firm α ($C_{i_\alpha \rightarrow j}$). We followed prior studies and adopted the most widely used measure of resource dependence.

Specifically, $C_{j \rightarrow i_\alpha} = Z_{ij} O_j \text{Share}_\alpha$, where Z_{ij} represents the importance of industry j 's resources to industry i (calculated as the total percentage of industry i 's buying and selling activities with

industry j)³ and O_j is the concentration ratio of industry j. $Z_{ij}O_j$ represents industry i's dependence on industry j (Burt, 1983, 1992; Casciaro & Piskorski, 2005; Pfeffer & Salancik, 1978; Westphal et al., 2006). $Z_{ij}O_jShare_\alpha$ captures the firm's dependence on industry j because the larger the firm's market share in industry i, the more difficult it is for it to find alternative exchange partners in industry j; conversely, a smaller firm in industry i can more easily find alternative partners in industry j. $C_{i\alpha\rightarrow j} = Z_{ji}Share_\alpha$, where Z_{ji} represents the importance of industry i's resources to industry j, and $Share_\alpha$ represents the market share of the firm in industry i, capturing the difficulty of finding exchange partners comparable to the firm in industry i—the larger the firm's market share, the harder it is to find its substitutes from industry i. $Z_{ji}Share_\alpha$ thus captures the dependence of firms in industry j on the focal firm. When a firm operates in more than one industry, we used the proportion of the firm's sales generated from each involved industry i as a weighting factor to calculate a weighted sum of the firm's direct disadvantage relative to firms in industry j.⁴

As discussed above, we identified industry j as a significant partner industry of firm α if the absolute value of its direct advantage over the firm is greater than 0.01 (i.e., one standard deviation above the average direct advantage among all partners). In additional analyses, we also adopted alternative cutoff points (e.g., 0.02 and 0.1) and obtained consistent results. For each

³ To make the calculation process manageable on a personal computer, we considered two industries as exchanging with each other only when the total percentage of selling and buying activities (i.e., $Z_{ij} + Z_{ji}$) is greater than 0.1% of their total exchanges.

⁴ For example, assume that firm α generates 20% of its total sales from industry i_1 and 80% from industry i_2 . Its businesses in industries i_1 and i_2 face -0.5 and -0.1 direct disadvantages relative to firms in industry j, respectively. The overall direct disadvantage of the firm versus industry j will equal $20\% \times (-0.5) + 80\% \times (-0.1) = -0.18$.

industry that firm α was involved with, we calculated its *indirect disadvantage* relative to firms in a significant partner industry j as the sum of $[(C_{j \rightarrow k} \times C_{k \rightarrow i_\alpha}) - (C_{i_\alpha \rightarrow k} \times C_{k \rightarrow j})]$ across all k , where $C_{j \rightarrow k}$ represents industry k 's dependence on industry j , $C_{k \rightarrow i_\alpha}$ represents firm α 's dependence on industry k , and $C_{j \rightarrow k} \times C_{k \rightarrow i_\alpha}$ represents firm α 's indirect dependence on industry j through k ; $C_{i_\alpha \rightarrow k}$ is industry k 's dependence on firm α , $C_{k \rightarrow j}$ is industry j 's dependence on industry k , and $C_{i_\alpha \rightarrow k} \times C_{k \rightarrow j}$ is industry j 's indirect dependence on firm α (the formulas used to calculate all direct dependences were described earlier). When firm α operates in multiple industries (i_1, i_2, \dots, i_m), we used the percentage of the firm's total sales generated from each industry i as a weighting factor to calculate the weighted sum of the firm's indirect disadvantage relative to firms in the partner industry j .

If we considered a firm's direct (or indirect) power relation with another industry to be significant when its value was more than one standard deviation away from average, an average firm in our sample faced 9.1 (out of 369 theoretically possible) significant direct power relationships. Thirty-two percent of significant direct relationships were included in triads where significant indirect power relationships were present. Thirty-five percent of public firms included in our initial sample were involved in triadic cycles of significant exchange relations where both direct and indirect power relationships were significant. This shows that cyclic triads of exchange relations are very common, and indirect disadvantages can influence many firms' decisions and performance.

A firm's *motivation to gain two-step leverage* over powerful partners through non-partners in industry j was calculated by using the same formula for calculating a firm's indirect power disadvantage relative to industry j , except that industry j was limited to the firm's non-partners. As discussed on page 19, we considered industry j as the firm's non-partner when the absolute value of industry j 's direct disadvantage relative to the firm was no larger than 0.01. In testing the performance effect of a firm's *total indirect disadvantage* relative to all exchange partners (i.e., H4), we first measured the firm's total indirect disadvantage through its business in industry i as the sum of this business's indirect disadvantages relative to all other industries. We then used the proportion of sales the firm generated from each industry i as a weighting factor to calculate a weighted sum of its total indirect disadvantage relative to all exchange partners. It is worth noting that indirect disadvantage was a different variable measured at the firm–industry level in testing H1 through H3.

Controls

In testing H1 through H3 (i.e., a firm's acquisitions in industry j), our unit of analysis was firm–industry $_j$ –year. In testing H4, our unit of analysis was firm–year. All our control variables below were measured based on the corresponding unit of analysis.

In analyzing a firm's acquisitions of partners in industry j , we controlled for industry j 's advantage over other third-party industries (*advantage over third parties*).⁵ This variable was

⁵ In additional analyses (results available upon request), we further controlled for structural holes around industry j , measured as $-(Z_{ij} + \sum_{q \neq i \neq j} Z_{iq} Z_{qj})^2 O_j$ (Burt, 1992). Although structural holes were significantly correlated with

measured as the sum of industry j 's total direct and indirect advantages over all other third-party industries (i.e., those not included in the calculation of a firm's direct or indirect disadvantages relative to industry j). Industry j 's power position relative to others may influence a firm's motivation to acquire firms in the industry (Hernandez & Shaver, 2019). We further controlled for a firm's ownership of intermediaries (*ownership ties*), measured by the average market share of the firm in all intermediary industries. Owning intermediaries can be an important alternative mechanism through which a firm exercises indirect influence over firms in industry j .

We further controlled for potential concerns about *transaction costs* by using *power imbalance* and *mutual dependence* between a firm and business units in industry j , measured as the absolute value of $(Z_{ji}O_i - Z_{ij}O_j)$ and $(Z_{ji}O_i + Z_{ij}O_j)$, respectively (components of the formulas were described earlier). The dependence of one organization on another reflects the frequency of transactions between them and the difficulty in finding alternative partners, a major type of coordination cost (Burt, 1983; Pfeffer & Salancik, 1978; Williamson, 1979). When two partners' mutual dependence is high, the aggregated concern for coordination cost tends to be high, increasing acquisition likelihood (Casciaro & Piskorski, 2005); when one party depends more on the other (i.e., power is imbalanced), there can be greater concerns about partners' opportunistic behavior or transaction costs, increasing the tendency to internalize the transaction through acquisitions (Singh & Montgomery, 1987). When a firm operates in multiple industries, we used the proportion of the firm's sales in each industry as a weighting factor, and used the

indirect advantage, VIF statistics showed no concerning levels of multicollinearity in this additional analysis. Our results remained unchanged with or without the control of structural holes.

weighted sum of the above measures of ownership ties, power imbalance, and mutual dependence as our controls. Because mutual dependence is highly correlated with power imbalance in the analysis of acquisition expenditure, we used the logarithm of its value in our model.

We controlled for *completion ratio* of acquisitions in industry j , calculated as the total value of completed overall acquisitions in industry j in the previous five years. This variable can reflect the ability of firms in industry j to resist acquisition attempts by others. *Firm size* was measured as the logarithm of total sales in year t . The performance of the firm in year t was measured by its *ROA*. Cash flow of the firm in year t was measured by debt-to-equity ratio (*firm debt ratio*) (Finkelstein & Halebian, 2002; Jensen, 1986). We also included in our models the number of industries a firm operates in (*number of industries*), which together with firm size can capture the centrality of the firm (Wasserman & Faust, 1994). We controlled for key characteristics of industry j , including the logarithm of its total sales (*size, industry j*), the average ROA of firms in it (*ROA, industry j*), and the average debt-to-equity ratio of firms in it (*debt ratio, industry j*). We used industry j 's two-digit IO codes to create industry dummies and included them in our models. We also included year dummies in all models. In analyzing acquisition likelihood, we also controlled for the total number of prior acquisitions in industry j ($t-5$ and $t-1$) (*prior acquisitions*), which is a proxy for the number of available targets in the industry.⁶

⁶ We also used the number of firms in industry j as an alternative measure; the results were unchanged.

In analyzing a firm's acquisitions of non-partners in industry j , we controlled for the same variables as we did in our analyses of a firm's acquisitions of partners, except for direct disadvantage. This is because by definition the firm has negligible levels of direct disadvantage relative to non-partners. In an additional analysis, we further included direct disadvantage as a control; the results were unchanged.

In our analysis of a firm's financial performance, we controlled for a firm's *total direct disadvantage* relative to exchange partners in all other industries. We first measured a firm's direct disadvantage versus all exchange partners through its business in industry i as the sum of this business's direct disadvantages versus all other industries. We then used the proportion of sales the firm generated from each industry i as a weighting factor to calculate a weighted sum of its total direct disadvantage through all involved industries. We further controlled for *ownership ties*, *power imbalance*, and *mutual dependence* over all exchange partners as the sum of each measure at the firm–industry level, as reported above, across all industries.

The correlation between power imbalance and mutual dependence in our sample was high, so we used the logarithm of mutual dependence to avoid multicollinearity issues. We controlled for *firm size*, *debt ratio*, and *number of industries*, as defined above. We also controlled for the firm's *R&D*, *advertisement*, and *capital expenditure* as corresponding ratios to total sales. These three variables largely capture alternative ways for firms to achieve superior performance. We also controlled for the logarithm of the industry-adjusted *prior ROA* of the firm because future

financial performance is often affected by prior performance. We further controlled for year dummies in our fixed-effects models.

Analysis

In analyzing the likelihood of acquiring partners, we used logistic regressions with two-way clustering of standard errors around both the firm and industry j (Cameron, Gelbach, & Miller, 2011; Kleinbaum, 2012; Kleinbaum, Stuart, & Tushman., 2013). In analyzing expenditure in acquiring partners, we adopted the two-stage Heckman model (Heckman, 1979) to address potential sample selection biases. We used the total number of acquisitions conducted by a firm's industry and the total number of acquisitions conducted by the target industry in the previous five years as two exclusion restrictions in the first stage, and both variables had significant effects (at $p < 0.001$). In the second-stage regression, we used the feasible generalized least squares (GLS) regression that specified a heteroscedastic error structure (Heckman, 1979). A Wald test of independent equations confirmed that using the Heckman selection model was appropriate (Certo, Busenbark, Woo, & Semadeni, 2016). In an additional analysis, we further adopted an ordinary least squares (OLS) regression with two-way clustering of standard errors around both industry i and industry j in the second-stage regression, using the *clus_nway* program in Stata (Cameron et al., 2011; Kleinbaum, 2012; Kleinbaum et al., 2013), and obtained highly consistent results.

In analyzing acquisitions of non-partners, we adopted the same models as we used in analyzing acquisitions of partners. In analyzing firm performance, we used fixed-effects models and GLS regressions with firm-wise heteroscedasticity. Results also held when we used the random-effects and OLS models with robust standard errors.

RESULTS

Table 1 reports summary statistics for key variables in our analysis of acquisition likelihood and expenditure. Table 2 reports findings from logistic regressions on acquisition likelihood (models 1–4) and Heckman models on acquisition expenditure (models 5–8), both at the firm–industry level. Results from model 2 show that both direct and indirect disadvantages positively influenced the likelihood that a firm would acquire *partners* in a target industry. The marginal effects (Wiersema & Bowen, 2009) of direct and indirect disadvantages were both statistically significant over the full range of sampled observations; z-statistics of the marginal effects ranged from 2.45 to 13.57 for direct disadvantage and from 4.77 to 32.60 for indirect disadvantage. When all predictive variables were set at their means, the baseline probability of acquiring partners is 0.022 and the marginal effects of direct and indirect disadvantages were 0.101 ($p < 0.001$) and 0.560 ($p < 0.000$), respectively. This is consistent with hypotheses 1a and 2a. For an average firm in our sample, an increase of direct and indirect disadvantages by one unit led to an increase in predicted acquisition likelihood by 10.1% and 56.0%, respectively. Because acquisitions of partners occurred in only 2.2% of dyads, the magnitudes of these effects are

considerable. The standardized regression coefficients for direct and indirect disadvantages are 0.031 and 0.035, respectively, suggesting that the magnitude of effect for direct and indirect disadvantages is comparable.

=====Insert Tables 1 and 2 about here=====

Results from model 4 of Table 2 show that motivation to gain two-step leverage positively influenced the likelihood that a firm would acquire *non-partners*. The marginal effect is statistically significant over the full range of sampled observations; z-statistics ranged from 2.61 to 20.11. When all predictive variables were set at their means, the baseline probability of acquiring non-partners was 0.0013 and the marginal effect of motivation to gain two-step leverage was 0.059 ($p < 0.001$). This is consistent with hypothesis 3a. For an average firm in our sample, an increase of one unit in the motivation to gain two-step leverage led to an increase in the predicted acquisition likelihood of 5.9%, a considerable magnitude of effect.

Model 6 in Table 2 reports results from our Heckman analysis of the expenditure on acquiring partners. Specifically, a firm's direct and indirect disadvantages relative to business partners in a target industry both had a significantly positive effect on the firm's expenditure in acquiring these partners. These results are consistent with our hypotheses 1b and 2b. The results also show that an increase in direct and indirect disadvantage by one standard deviation led to an increase in acquisition expenditure by about 2% and 8%, respectively, demonstrating considerable magnitudes of these effects. Model 8 in Table 2 shows findings from our Heckman analysis of the expenditure on acquiring non-partners. The motivation to gain two-step leverage

positively affected expenditure on acquiring non-partners, and the effect was significant at $p < .07$ on a one-tailed test, providing some support for hypothesis 3b.

Table 3 reports summary statistics for key variables in our analysis of firm performance. Table 4 shows results from fixed-effects regressions (models 1 and 2) and GLS regressions (models 3 and 4) on firm performance. Models 2 and 4 are the complete models, both showing that indirect disadvantage has a significantly negative effect on firm performance. This confirms our hypothesis 4. Further calculations based on model 2 and model 4 show that an increase in a firm's indirect disadvantage of one standard deviation would lead the firm to reduce its ROA by about 1.90 (or 190%) or 0.88 (or 88%), respectively, revealing a very substantial magnitude of the indirect disadvantage effect.

=====Insert Tables 3 and 4 here=====

Supplementary Analyses

Our theory can also be applied to explain phenomena at the firm–firm level. Because input-output tables would not allow us to test our theory at this level, we conducted original surveys to assess its applicability and found corroborative evidence in support of our theory at the firm–firm level. Please see Appendix B for more details.

We conducted further analyses to examine the potential for endogeneity caused by omitted variables. Following existing research (Busenbark, Lange, & Certo, 2017; Frank, 2000), we estimated impact threshold for a confounding variable (ITCV) scores for our independent variables of interest using the *konfound* command in Stata. In all of our analyses on acquisition

frequency, expenditure, and performance, the impact threshold of a potentially omitted variable was consistently larger than the impacts of all control variables included in the models, providing no evidence that omitted variables are a concern in our analyses.

In additional analyses, we also created alternative measures of acquisition likelihood, expenditure (measured between year t and year $t+3$), and performance (measured between year t and year $t+4$), and still obtained consistent support for our hypotheses. In separate analyses, we further considered the possibility that an actor may exercise indirect advantage through more than one step of exchange relations. Our findings remained unchanged when we included three- and/or four-step advantages in our measure of indirect advantage (we found five-step advantages negligible in our sample).

Moreover, we created alternative measures of direct and indirect disadvantages by using an alternative measure of the dependence of firms in industry j on firm α ($C_{i\alpha \rightarrow j}$), calculated as $Z_{ji}share_{\alpha}O_i \frac{share_{\alpha}}{\frac{O_i}{8}} = 8Z_{ji}share_{\alpha}^2$. Specifically, $\frac{share_{\alpha}}{\frac{O_i}{8}}$ captures the size of firm α relative to an average top-eight firm in industry i . If firm α is an average top-eight firm in industry i , then the eight-firm concentration ratio of industry i is a proper measure of the difficulty in finding an alternative to firm α —the larger the firm, the harder it is to find its alternatives. In addition, we also used an alternative measure of $C_{j \rightarrow i\alpha}$, calculated as $Z_{ij}O_j$. This measure assumes that firm α 's dependence on industry j is no different from the average dependence of firms in industry i on firms in industry j . Using the alternative measures of $C_{i\alpha \rightarrow j}$ and $C_{j \rightarrow i\alpha}$, we obtained different

measures of direct and indirect disadvantages at the level of firm–industry and still found consistent support for our hypotheses.

In an additional analysis, we measured a firm’s average ROA and acquisition expenditure between years t and $t+4$ and used indirect disadvantage measured in year t as the predictor. We found that acquisition expenditure was a statistically significant ($p < 0.01$) partial mediator of the relationship between indirect disadvantage and financial performance (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). In a similar analysis, we also found that ownership of intermediaries was a statistically significant ($p < 0.04$) partial mediator of the relationship between indirect disadvantage and financial performance. These findings suggest that acquisitions in response to disadvantages overall helped firms improve financial performance, despite the challenges associated with conducting acquisitions.

DISCUSSION

Although organizational power has long been a central topic in management and organization research, interorganizational power has long been conceptualized in terms of dyadic resource exchange relations. Because modern corporations are embedded in an increasingly complex network of resource exchange relations, some organization theorists argue that the dyadic focus of existing theories of power has greatly limited their value in guiding organization research and practice (Gargiulo, 1993; Wry et al., 2013). In particular, a major limitation of the dyadic perspective is that the recommendation to manage power and dependence relationships by

directly acquiring powerful partners is often difficult to implement. We developed a more complete structural perspective on interorganizational power that explains substantially more variance in corporate strategy and performance outcomes than existing perspectives. Our theory explains how a significant partner can obtain favorable exchange terms from a focal actor by leveraging its indirect advantages through common partners. We suggest that an actor can enhance its power position by acquiring partners that have either direct or indirect advantages over it and by acquiring non-partners to gain two-step leverage over partners that possess direct advantages over it. In addition, our structural theory of power suggests that the total indirect disadvantage of an actor is a fundamental source of inferior financial performance. We tested our theory at the industry–industry and firm–industry levels, using a large sample of American corporations and industries. The findings provide strong support for our structural theory of power and are robust to alternative operationalizations of key constructs and estimation models. We also found corroborative evidence for our theory at the firm-firm level based on an original survey with several hundred top executives.

The theory and supportive findings of this study make important contributions to research on organizational power and resource dependence. As discussed above, existing theories of power and dependence have focused largely on an organization's direct resource exchange relationship with another partner (Casciaro & Piskorski, 2005; Finkelstein, 1997; Gulati & Sytch, 2007; Pfeffer & Salancik, 1978; Porter, 2008), and hence cannot fully explain how indirect dependence relationships influence organizational power. In addition, a major limitation of the

dyadic perspective of power and dependence is that its key recommendation to acquire directly advantaged partners is often difficult to implement. In developing a theory of indirect dependence and power advantage, we advanced a novel perspective that highlights an unstudied source of power. Because nearly one third of direct dependence relations are influenced by indirect dependence relations, our theory highlights how neglecting indirect power advantage can lead to an incomplete understanding of the sources of interorganizational power. In addition, our study suggests that an actor can neutralize its direct disadvantage relative to a partner by acquiring not only other partners but also non-partners that have advantages over the partner, highlighting a full range of structural options that can be more feasible than acquiring the directly advantaged partner.

Our theory and supportive findings also enrich our understanding of the two-step leverage theory (Gargiulo, 1993), which suggests that an actor can neutralize its direct disadvantage relative to a partner by establishing social, political, or alliance ties with non-partners that have influence over the advantaged partner (Bae and Gargiulo, 2004). In explaining how the actor can also neutralize its direct disadvantage relative to a partner by acquiring non-partners that have influence over the partner, our study highlights a novel mechanism of gaining two-step leverage. Because acquiring non-partners allows an actor to fully exercise two-step leverage through them, our study significantly extends the two-step leverage theory by showing that acquisition is a strong and unstudied means of achieving two-step leverage.

The theory and supportive findings of this study also make important contributions to strategic management research by offering a novel, social structural perspective to understand corporate strategies and sources of competitive advantage. Specifically, we suggested and found that the construct of direct power disadvantage (Emerson, 1962) is an important and unstudied determinant of acquisition activities—to our knowledge no prior studies have explored the impact of direct power disadvantage on acquisition activities. In addition, we developed the construct of indirect power disadvantage and showed its significant and substantial impacts on both acquisition activities and financial performance. Moreover, our study is the first to show how motivations to gain two-step leverage over advantaged partners can prompt organizations to acquire non-partners.

Our theory of indirect disadvantage also complements existing theories on how industry structure influences profitability (Burt, 1992; Porter, 2008). We suggested that buyer–supplier relations can be better understood by considering their indirect power relations to each other through common exchange partners. Our findings confirmed that indirect disadvantage at both the industry and firm levels is a strong predictor of acquisition activities and profitability. Overall, our theory and supportive findings make important contributions to sociological perspectives of strategy by offering a novel and important structural theory of interorganizational power, corporate strategy, and performance.

Our study also makes a significant contribution to the conceptualization of resource dependence and power. In addition to developing the construct of indirect advantage and two-

step leverage, our study contributes to research on power by highlighting the importance of focusing on the firm–industry level of analysis. Although theories of power have long suggested that power is a construct that describes an organization’s relationship to a resource or to providers of a resource (Cook & Emerson, 1978; Pfeffer & Salancik, 1978), to our knowledge no prior studies have examined power at the organization–resource or firm–industry level. Our approach also highlights the empirical advantages of analyzing corporate activities at the firm–industry level. Using public data from the U.S. Bureau of Economic Analysis on interindustry resource exchanges, we showed how researchers can more fully utilize available information to advance knowledge that has clearer and stronger relevance to firms than prior studies that focused on interindustry activities only.

This study has several limitations. BEA assumes that all firms in an IO-based industry have the same method of production and collect input-output data accordingly. While we have sought to control for various firm-level attributes in our analysis at the firm–industry level, the validity of our findings can still be affected by the extent to which BEA’s assumption holds in its input-output data. In addition, we have adopted the traditional measure of resource dependence, which uses concentration ratio as an imprecise proxy for the availability of alternative resource providers. Our study thus also shares prior studies’ limitation in measuring resource dependence.

Although our data would not allow a direct examination of the specific theoretical mechanisms involved, our interviews and surveys with top executives did provide some corroborative evidence in support of our theoretical mechanisms. For example, a top executive of

a large furniture retailer told us in an interview that the company routinely exercises its indirect advantage over providers of raw materials through large furniture manufacturers. In this triad, the retailer enjoys direct advantages over furniture manufacturers, which in turn enjoy direct advantages over providers of raw materials such as wood and plastic components. When the retailer launched its own furniture products, its relatively low volume of demand on raw materials created a direct disadvantage relative to raw material providers. This retailer's CEO then asked top executives of two major furniture manufacturers to help the firm obtain raw materials from their suppliers at competitive prices. Executives of these furniture manufacturers wanted to please their major customer and talked with their suppliers accordingly. The providers of raw materials similarly wanted to please the large furniture manufacturers (i.e., their major customers) and quickly acceded to the retailer's request, allowing the retailer to buy raw materials from them at very low prices. As another example, a top executive of a large plastics manufacturer told us that his firm frequently sells products (e.g., containers) to petroleum refineries at very low prices, although these refineries do not have any direct advantages over his firm. This is because managers of resin manufacturers, his firm's key suppliers, often ask his firm to offer deals to refineries.

In an additional analysis, we examined whether direct and indirect disadvantages interact with one another in influencing acquisition outcomes. The findings from this analysis show that indirect disadvantage significantly and positively interacted with direct disadvantage in influencing acquisition likelihood and expenditure at both industry-industry and firm-industry

levels. This suggests that indirect disadvantage not only exerts a main effect on acquisition outcomes but also augments the effect of direct disadvantage. We speculate that this may be because an actor is more concerned about a given type of power disadvantage relative to a partner when it also faces the other type of disadvantage relative to the same partner, giving the actor stronger motivations to acquire the partner. Despite this overall finding, there can be cases in which indirect disadvantage attenuates or has little influence on the effect of direct disadvantage. Systematic examinations of when and how direct and indirect disadvantages jointly influence uncertainty absorption decisions seem to be a promising avenue for future research.

Our theory has important implications for research on the effects of structural holes and network closure. These theories of network structure have been widely adopted to explain key issues such as innovation and creativity (Ahuja, 2000; Sytch & Tatarynowicz, 2014), alliances (Bae & Gargiulo, 2004), and performance (Burt, 1992). Yet only a few studies have considered unbalanced ties in structural analysis of networks. Research by Gargiulo (1993) and Bae and Gargiulo (2004) analyzed unbalanced ties between two actors in a triad. Reagans and Zuckerman (2008) examined two types of structural holes (i.e., when ego either has advantages or disadvantages relative to all alters). In considering all possible unbalanced ties among all actors in a network of any size, our structural theory of advantage can analyze many more types of network closures and structural holes than existing theories. Given evidence from the present study that it is important to fully incorporate unbalanced ties into a structural analysis of

networks, it seems promising to examine how our theory may influence other types of organizational behavior that are affected by structural holes or network closure.

Our structural theory of power also has important implications for a wide range of uncertainty absorption decisions (Pfeffer & Salancik, 1978). Prior research suggests that organizations can manage their power and dependence relationships through other types of strategies such as joint ventures and alliances (Bae & Gargiulo, 2004), interlocking directorships (Westphal and Zhu, 2019), and executive successions (see review by Hillman et al., 2009). Because prior studies in the resource dependence tradition have focused on dyadic-level resource exchange relationships to understand these decisions, our structural theory of power offers a novel perspective to advance theoretical and empirical models of these decisions. In general, as network scholars increasingly seek to understand how the effects of network structure are influenced by various properties of ties (e.g., Baum, McEvily, & Rowley, 2012; Burt, 1992, 2004), incorporating unbalanced ties into structural analysis of networks seems to be a promising direction for future research. In addition, given renewed interest in resource dependence theory in recent years, examining how an organization's position in the resource exchange network may influence its major decisions and performance outcomes calls for further research attention.

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Table 1. Summary Statistics for Variables in the Analysis Acquisitions^a

Variable	Mean	S.D.	1	2	3	4	5	6	7	
1. Acquisition occurred	0.003	0.050								
2. Acquisition expenditure	-3.580	1.793	.							
3. Direct disadvantage	0.001	0.007	0.061	0.059						
4. Indirect disadvantage	0.003	0.007	0.042	0.100	0.218					
5. Motivation to gain two-step leverage	0.000	0.001	0.017	0.026	0.147	.				
6. Advantage over third parties	-0.045	0.097	0.017	-0.012	0.112	0.239	0.102			
7. Ownership ties	0.023	0.066	0.015	-0.212	-0.006	0.003	-0.006	0.002		
8. Power imbalance	0.001	0.010	0.047	-0.001	0.493	0.078	-0.005	0.018	0.002	
9. Mutual dependence	0.002	0.014	0.064	0.004	0.688	0.082	0.007	0.028	0.004	
10. Completion ratio	0.857	0.195	-0.001	0.010	-0.031	-0.038	-0.011	-0.064	0.000	
11. Firm size	7.334	1.661	0.023	-0.439	-0.021	-0.042	-0.033	0.028	0.378	
12. Firm ROA	0.028	0.171	0.006	0.011	-0.007	-0.016	-0.007	0.008	0.029	
13. Firm debt ratio	-0.002	0.286	0.001	-0.079	-0.001	-0.004	0.000	-0.003	0.004	
14. Number of industries	1.557	1.751	0.017	-0.199	-0.001	0.007	0.000	0.001	0.395	
15. Size, industry j	9.462	1.419	0.039	-0.075	0.128	0.082	0.081	0.338	0.005	
16. ROA, industry j	-0.005	0.142	0.001	0.028	0.000	0.010	0.002	-0.027	-0.001	
17. Debt ratio, industry j	0.002	0.037	0.005	-0.023	0.017	0.013	0.004	0.033	0.001	
18. Prior acquisitions	0.002	0.073	0.191	0.046	0.051	0.026	0.013	0.014	0.011	
Variable	8	9	10	11	12	13	14	15	16	17
9. Mutual dependence	0.876									
10. Completion ratio	-0.014	-0.008								
11. Firm size	0.063	0.056	-0.009							
12. Firm ROA	-0.004	-0.005	-0.012	0.067						
13. Firm debt ratio	0.001	0.000	0.002	0.003	0.002					
14. Number of industries	0.005	0.008	0.001	0.350	0.025	0.004				

15. Size, industry j	0.046	0.054	-0.061	0.061	0.004	-0.006	0.003			
16. ROA, industry j	0.002	0.001	0.018	-0.011	-0.003	0.001	0.000	0.008		
17. Debt ratio, industry j	0.010	0.008	-0.070	0.010	0.004	-0.001	0.000	0.074	0.000	
18. Prior acquisitions	0.036	0.056	-0.001	0.020	0.001	0.001	0.013	0.032	0.001	0.005

a. Coefficients related to acquisition expenditure (N=4, 798) and indirect disadvantage (N=28,111) are significant $p < 0.05$ when absolute values are greater than 0.046 and 0.013, respectively; coefficients related to other variables (N=1,897,309) are significant at $p < 0.05$ when absolute values are greater than 0.002.

Table 2. Results on Firm–Industry–Level Acquisitions Likelihood and Expenditure^a

Variable	Likelihood: partners		Likelihood: non-partners		Expenditure: partners		Expenditure: non-partners	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Direct disadvantage		4.733 (0.001)				2.295 (0.000)		
Indirect disadvantage		26.350 (0.000)				12.120 (0.000)		
Motivation to gain two-step leverage				44.590 (0.000)				9.053 (0.143)
Advantage over third parties	-2.240 (0.000)	-3.424 (0.000)	-0.054 (0.889)	-0.171 (0.654)	-0.482 (0.030)	-1.259 (0.000)	0.467 (0.010)	0.466 (0.055)
Ownership ties	-0.413 (0.492)	-0.618 (0.294)	0.499 (0.183)	0.509 (0.175)	-1.077 (0.000)	-0.954 (0.000)	0.127 (0.274)	0.067 (0.685)
Power imbalance	-1.440 (0.178)	-1.863 (0.076)	-66.020 (0.000)	-65.360 (0.000)	-1.161 (0.000)	-2.220 (0.000)	1.576 (0.165)	1.461 (0.205)
Mutual dependence	2.993 (0.000)	0.948 (0.265)	68.520 (0.000)	67.970 (0.000)	0.149 (0.000)	0.075 (0.001)	-0.013 (0.166)	-0.011 (0.248)
Completion ratio	0.206 (0.494)	0.154 (0.595)	0.705 (0.001)	0.714 (0.001)	0.026 (0.702)	0.062 (0.252)	-0.077 (0.340)	-0.052 (0.526)
Firm size	0.259 (0.000)	0.306 (0.000)	0.201 (0.000)	0.202 (0.000)	-0.506 (0.000)	-0.512 (0.000)	-0.510 (0.000)	-0.510 (0.000)
Firm ROA	0.573 (0.275)	0.577 (0.271)	1.007 (0.000)	1.013 (0.000)	0.222 (0.000)	0.204 (0.000)	0.114 (0.253)	0.143 (0.161)
Firm debt ratio ^a	0.081 (0.142)	0.093 (0.118)	0.172 (0.106)	0.172 (0.107)	-18.120 (0.000)	-18.240 (0.000)	1.398 (0.360)	1.400 (0.358)
Number of industries	0.015 (0.358)	0.012 (0.445)	0.033 (0.001)	0.033 (0.001)	0.017 (0.124)	0.046 (0.000)	-0.017 (0.000)	-0.017 (0.000)
Size, industry j	0.250 (0.000)	0.262 (0.000)	0.335 (0.000)	0.332 (0.000)	0.017 (0.077)	0.020 (0.014)	-0.064 (0.000)	-0.066 (0.000)
ROA, industry j ^a	-0.100	-0.117	0.517	0.518	2.332	-4.315	5.921	5.495

	(0.450)	(0.383)	(0.033)	(0.034)	(0.311)	(0.135)	(0.015)	(0.030)
Debt ratio, industry j ^a	0.584	0.848	0.415	0.421	-4.610	-4.269	0.447	0.508
	(0.730)	(0.620)	(0.563)	(0.561)	(0.000)	(0.000)	(0.346)	(0.286)
Prior acquisitions/IMR ^b	0.996	0.959	2.483	2.474	-0.190	-0.191	-0.321	-0.320
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

- a. p -values in parentheses; constant term, industry dummies, and year dummies included in all models; marked variables were rescaled to be one thousandth of original values.
b. coefficients are for prior acquisitions in models 1–4 and for inverse Mills ratio (IMR) in models 5–8; $p < 0.001$ for LR (models 1–4) and Wald chi-square (models 5–8) tests.

Table 3. Summary Statistics for Variables in the Analysis of Firm Performance (N=4,933)^a

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
1. ROA ^b	6.95	0.01												
2. Direct disadvantage	0.30	0.21	-0.02											
3. Indirect disadvantage	0.05	0.07	-0.04	0.80										
4. Power imbalance	0.00	0.00	0.00	-0.10	-0.08									
5. Log mutual dependence	0.00	0.00	0.01	0.34	0.28	0.68								
6. Ownership ties	0.02	0.07	0.08	-0.08	-0.03	0.01	0.08							
7. Firm size	0.01	0.00	0.02	-0.33	-0.27	0.23	0.30	0.38						
8. Debt ratio	0.00	0.03	0.00	-0.03	-0.05	0.01	0.01	0.00	0.04					
9. R&D	0.02	0.06	0.01	-0.06	-0.09	-0.06	-0.11	0.01	-0.03	-0.01				
10. Advertisement	0.01	0.03	-0.01	-0.14	-0.07	-0.07	-0.13	0.04	0.01	0.01	-0.01			
11. Capital expenditure	0.08	0.13	-0.06	0.01	-0.02	0.02	0.07	-0.05	0.03	0.01	-0.02	-0.05		
12. Number of industries	0.00	0.00	0.08	-0.04	-0.01	0.04	0.12	0.47	0.39	0.00	0.00	0.01	-0.04	
13. Prior ROA ^b	1.01	0.45	0.16	-0.03	-0.05	-0.06	-0.08	0.04	0.03	0.01	0.11	-0.01	-0.06	0.02

a. Coefficients are significant at $p < 0.05$ when absolute values are 0.03 or larger

b. This is the transformed value of the initial industry-adjusted ROA. Specifically, the value here equals $\log(\text{initial value} + 1045.04)$.

Table 4. Regressions on Firm Performance^a

Variables	Fixed-effects Model		GLS Model	
	(1)	(2)	(3)	(4)
Indirect disadvantage		-0.026 (0.038)		-0.012 (0.000)
Direct disadvantage	-0.006 (0.091)	0.001 (0.816)	-0.003 (0.000)	-0.001 (0.000)
Ownership ties	0.004 (0.639)	0.004 (0.644)	0.006 (0.000)	0.006 (0.000)
Power imbalance ^b	1.059 (0.221)	0.878 (0.312)	-0.199 (0.000)	-0.255 (0.000)
Mutual dependence ^b	-1.450 (0.318)	-1.717 (0.239)	0.556 (0.000)	0.638 (0.000)
Firm size	-1.054 (0.287)	-0.832 (0.403)	-0.352 (0.000)	-0.371 (0.000)
Debt ratio ^b	-0.004 (0.882)	-0.007 (0.795)	0.000 (0.877)	-0.003 (0.000)
R&D	-0.001 (0.944)	-0.001 (0.924)	-0.002 (0.000)	-0.002 (0.000)
Advertisement	0.002 (0.931)	0.003 (0.900)	-0.005 (0.000)	-0.005 (0.000)
Capital expenditure	-0.017 (0.004)	-0.017 (0.003)	-0.003 (0.000)	-0.004 (0.000)
Number of industries ^b	0.300 (0.377)	0.280 (0.409)	0.502 (0.000)	0.426 (0.000)
Prior ROA ^b	0.005 (0.000)	0.005 (0.000)	0.004 (0.000)	0.004 (0.000)
Year dummies	yes	yes	yes	yes
Constant	6.955 (0.000)	6.952 (0.000)	6.952 (0.000)	6.952 (0.000)
R-squared	0.039	0.041		
Wald chi-squared (<i>p</i>)			0.000	0.000

a. $N = 4,933$; p -values in parentheses.

b. Variables were rescaled to be one thousandth of original values to allow proper reporting of results.

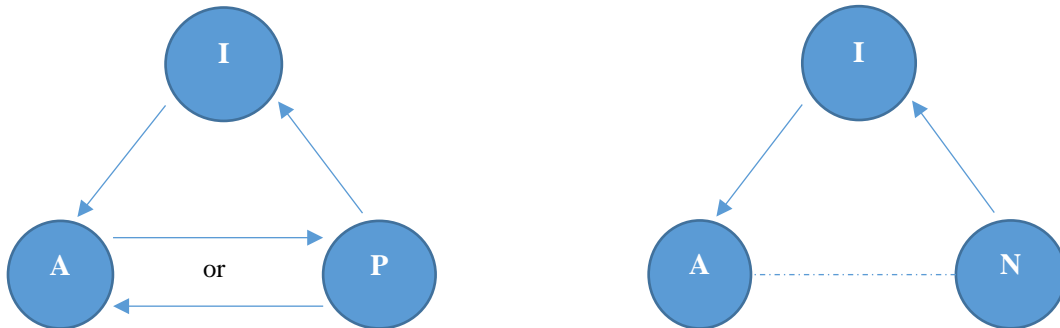


Figure 1a

Figure 1b

A=Actor; P=Partner; I=Intermediary; N=Non-partner
—→ *sender has the advantage; - - - - - no exchange*