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THE LIABILITY OF STRANGERS: PERFORMANCE CONSEQUENCES OF NON-LOCAL PARTNERING ABSTRACT

This paper examines the performance consequences of non-local partnering – formation of new ties between organizations that have neither prior direct nor indirect connections. Although non-local ties provide organizations with potential benefits including enhanced opportunities to broker resource and information flows across unconnected partners, they also entail risks associated with the absence of collaborative routines and limited information regarding non-local partners' capabilities and cooperativeness. Our analysis of Canadian investment banks' underwriting syndicate ties confirms that while, initially, non-local partnering is detrimental to performance, with repetition these ties begin to enhance performance. The ability to extract performance benefits from non-local ties also depends on organizations' network positions –closed ego networks and high status enable banks to benefit from forming new non-local ties as well as from subsequently repeating them.

Key words: Organizational performance, Non-local partner, Relational Embeddedness, Structural, Embeddedness, Positional Embeddedness.

Partnerships embed organizations within a web of collaborative efforts that can enhance their performance by securing access to needed resources and capabilities, unique information and opportunities, and status-enhancing endorsements (Ireland, Hitt, & Vaidyanath, 2002). Although partnerships can be a valuable source of competitive advantage, they are not risk-free, often proving a challenge to manage (Inkpen & Crossan, 1995) and exposing organizations to the risk of opportunistic and uncooperative behaviors (Khanna, Gulati, & Nohria, 1998; Shipilov, Rowley, & Aharonson, 2006).

These risks are most conspicuous in 'non-local' ties that cut across regions of the network, connecting partners that have not previously been linked by either direct or indirect ties (Baum, Rowley, Shipilov, & Chuang, 2005). When establishing non-local ties, organizations possess limited information about each other's capabilities, reliability and motives, or their ability to work together effectively. As a result, non-local ties are among the riskiest organizations can build. To avoid these uncertainties, organizations frequently develop preferential relationships, deepening and renewing ties with past partners (Gulati, 1995a), and forming new ties with their partners' partners based on referrals (Baker, 1990). This 'local' mode of partner selection fosters the emergence of clusters of organizations, within which ties are dense and between which they are sparse (Baum, Shipilov & Rowley, 2003). Exclusive reliance on local ties exposes organizations to a different, but equally significant, risk: limiting the organization to information, opportunities, resources and skills residing within its immediate network neighborhood (Uzzi, 1996).

Organizations thus have a basic choice when selecting partners: opt for local ties, which limit the risks of collaboration; or form non-local ties, which increase the risks of collaboration but limit risks of isolation through exposure to novel information, resources and opportunities existing in other regions of the network. Although research provides evidence of decision makers' clear preference for local ties (e.g., Chung, Singh & Lee , 2000; Gulati & Gargiulo, 1999; Podolny, 1994), inter-organizational networks commonly exhibit both local clustering and non-

local ties that cut across the clusters (Kogut & Walker 2001), and recent studies have begun to identify conditions under which non-local ties are more likely to arise. Beckman, Haunschild and Phillips (2004), for example, found that non-local ties were more likely to emerge in response to organization-specific uncertainty that access to new information might resolve, while Baum et al. (2005) showed that they tend to be formed when search processes are triggered in response to aspiration performance gaps signaling the need or opportunity for partner change.

Although these studies indicate that, under certain conditions, organizations are willing to expose themselves to the risks of non-local ties, research has yet to examine their performance consequences. One reason for this is the conflation of "local bridges" and "non-local ties" in studies of their performance implications (e.g., Ahuja, 2000; Rowley, Behrens & Krackhardt, 2000) under the single umbrella term "bridging ties" (Burt, 2002). Bridging ties connect otherwise disconnected network members (Burt, 1992), but such disconnections exist not only between clusters of organizations, as is commonly assumed, but also within these clusters. Bridging ties within clusters connect organizations that are less than or equal to two geodesic steps away from each other, hence the name "local bridges"; whereas non-local ties are bridging relationships across clusters connecting organizations more than two geodesic steps away from each other. Both local bridges and non-local ties span structural holes, but their performance implications are likely to differ given their distinct risk profiles: in contrast to organizations establishing non-local ties, organizations building local bridges are likely to possess at least some information about each other's abilities, reliability and motives through common partners. Hence, local bridges are less risky than non-local ties; but by avoiding non-local ties an organization might never be able to fully realize advantages of brokerage, as it is through non-local ties that it can access information and resources not available in its immediate circle of partners.

The lack of insight into non-local ties' performance consequences represents a basic gap in our knowledge. This gap manifests itself not only in our inability to distinguish the effects of non-local ties from those of local bridges, but also in our lack of understanding the consequences

of dynamics in the inter-organizational networks. While local ties and local bridges tend to stabilize networks, non-local ties sow the seeds of network change and evolution (Baum et al., 2003), but how can organizations responsible for such change actually benefit from their relationship-building activities? To address these gaps, we seek to specify the performance implications of non-local ties in a more systematic manner by building on two distinct theoretical streams. First, we observe that as a result of the limited knowledge organizations have about each other's capabilities, reliability and motives, non-local tie formation could expose organizations to a 'liability of strangers' not unlike the 'liability of newness' facing new organizations (Stinchcombe, 1965). Consequently, we expect that new non-local ties will lower an organization's performance. However, in the same way that organizations can overcome the liability of newness with experience gained over time (e.g., Freeman, Carroll & Hannan, 1983; Hannan & Freeman, 1984), we expect that organizations can overcome the liability of strangers with collaborative routines and experience developed as they repeat and deepen ties with non-local partners.

Second, we suggest that an organization's ability to benefit from risky relationships will depend on the character of the relationships and network in which it participates (e.g., Powell et al., 2005). In particular, we expect that an organization's ability to extract performance benefits from non-local ties depends on its network embeddedness at three levels (Uzzi, 1996, 1997; Gulati & Gargiulo, 1999): 1) *relational embeddedness*, which captures the exclusivity of an organization's ties, 2) *structural embeddedness*, which reflects the extent of local bridging in an organization's ego network, and 3) *positional embeddedness*, which represents centrality or status of the organization's position in the overall network structure. The ways in which organizations are embedded at these three levels influence their ability to learn about non-local partners' capabilities and intentions, work with them effectively, and manage their interactions with existing local partners.

THEORY

Local and Non-local Partnering

Relationships bind organizations into inter-organizational networks. The pattern of ties in an organization's ego-network – its direct relationships with other organizations – is widely acknowledged to influence the organization's performance (Baum, Calabrese, & Silverman, 2000). However, organizations seeking to enhance performance through their ego-network face an important trade-off: Although direct inter-organizational ties are often touted as a base of organizational resources crucial to achieving competitive advantage (Gulati, 1999; Jensen, 2003; Lavie, 2006), their formation and maintenance carries inherent costs and risks (Oxley, 1997). One risk is capability misalignment, which results in partners being unable to supply the resources and capabilities the organization requires (Das & Teng, 1998a; Das & Teng, 1998b; Li & Rowley, 2002; Shipilov et al., 2006). A second is misalignment of partner interests or intentions, which results in uncooperative partner behaviors, such as learning races (Khanna, Gulati & Nohria, 1998), withholding promised resources (Griesinger, 1990; Wathne & Heide, 2000), or demanding excessive control over the partnership (Das & Teng, 1998a). Together or separately, these risks can undermine and potentially overwhelm any gains derived from a partnership.

Of course, not all potential partnerships entail the same risks. The information an organization possesses about a potential partner's capabilities, reliability and motives governs the level of risk and uncertainty it faces in an exchange relation with that partner (Oxley, 1997; Podolny, 1994). Organizations can thus lower risks in their partnerships by seeking additional information on potential allies via a 'local' partner selection strategy that emphasizes deepening and repeating ties with past partners (Podolny, 1994; Gulati, 1995a) and establishing new ties with partners' partners based on referrals from a common contact (Baker, 1990; Podolny, 1994; Uzzi, 1996, 1997, 1999). This partner selection strategy is 'local' because the organization forms relationships with partners that are proximate to it in the network; that is, they are removed from

the organization by no more than two geodesic steps. Beyond this "horizon of observability" (Friedkin, 1983), decision-makers are confronted with increasing difficulties of comprehending and interpreting the patterns of relationships between the network players as well as these players' behaviors and relational strategies. As a result, such partner selection strategy fosters the emergence of local clusters, whose members are typically partners and vicariously observe each other's behaviors and strategies.

Although a local partner selection strategy can limit the risks of non-cooperation, the risk reduction comes at a price: the ideas, perspectives, opportunities and resources to which the organization is exposed and has access to are restricted to those circulating within its local cluster (Lavie & Rosenkopf, 2006), which limits their brokerage value to the focal organization. Exclusive reliance on local ties thus potentially exposes organizations to overembeddedness and isolation (Uzzi, 1996). The probability of overembeddedness, however, can be mitigated by forming of non-local ties that span structural holes between organizations in different clusters, which could provide organizations with access to resources and information outside of their immediate network neighborhoods. At the same time, formation of non-local ties exposes organizations to the heightened risks of non-cooperation with its new partners, whose resources and conduct cannot be assessed via prior direct or indirect relationships.

Since both local bridges and non-local ties span structural holes, prior research viewed them under the umbrella term "bridging ties", despite potential differences in performance implications for organizations that build them for the first time. The key discrepancy between the two, however, is the magnitude of the structural hole which these ties span. All other things being equal, local bridges span structural holes within clusters, whereas non-local ties span structural holes across clusters. Figure 1 illustrates this difference. In the figure, solid lines represent established ties, dashed lines represent new ties, and labeled circles are organizations. The figure shows graphs of the same network at times T1 and T2, when the focal organization C1 initiates either a tie to partner C3 or a tie to partner A1, as well as the consequences of these ties for the

openness of the ego network of the focal organization C1. Structural holes are assessed using *effective size*, which is computed as n-($2t/n$), where n is an organization's number of direct partners and t is the number of ties among its partners, excluding ties to the organization itself (Burt, 1992:52). Effective size ranges from 1, when the organization spans no structural holes between its partners, to n, where it spans structural holes between each of its partners.

At time T1, C1's effective size is 1, indicating that it is located in the closed network because its direct partners C2 and C4 are connected to each other. There are two scenarios according to which C1 establishes bridging relationships at time T2. In Scenario 1, C1 forms a *local bridge* connecting itself to an organization C3. This tie is *local* because C1 and C3 are within two geodesic steps from each other, but it is nonetheless a *bridge* because now firm C1 spans a structural hole between C3 and C4, which are both members of the cluster C. As a result of this tie, C1's effective size increases by 0.33. In contrast, in Scenario 2, organization C1 establishes a non-local tie to a firm A1. This tie is non-local because it connects organizations that are more than two geodesic steps from each other (in fact, the geodesic distance between them in Scenario 2 is infinite). As a consequence, this non-local tie increases C1's effective size by 1.33. This simple example illustrates that non-local ties span greater structural holes than do local bridges: by linking organizations without indirect connections, new non-local ties increase effective size of the focal organization by a value of 1 or more. In contrast, by connecting organizations with indirect ties, new local bridges raise effective size by an amount between zero and one (Burt, 2007, personal communication).

Insert Figure 1 about here.

Non-local Partnering and Performance: A Liability of Strangers

What are the performance consequences of building non-local ties? Although theory suggests that spanning structural holes can be beneficial (e.g. Burt, 1992), but neither theory nor empirical

research examines performance consequences of non-local partnering. Yet, since these are the brand new relationships connecting an organization to unfamiliar network neighborhoods, they are bound to be the *riskiest* relationships that the organization can build. Specifically, the absence of possibilities for gaining 'inside' information about potential non-local partners' capabilities, conduct and reliability prior to the formation of such relationship, renders non-local ties prone to both misalignment of capabilities and interests. Non-local partners may not possess the kinds of novel ideas, opportunities, resources and capabilities sought from them. Even if they do, they may be unwilling to share them. Worse, non-local partners may engage in opportunistic behavior, including learning races (Khanna, Gulati and Nohria, 1999), failing to supply promised resources (Griesinger, 1990; Wathne & Heide, 2000), and making excessive demands for control (Das & Teng, 1998a, 1998b). And, even if they do possess the desired information and resources and are willing to share them, a lack of direct collaborative experience, as well as variation in collaborative practices across regions of the network, may undermine non-local partners' efforts to work together effectively, ultimately leading to performance problems for both partners.

Non-local partnering can thus be seen to expose organizations to a 'liability of strangers', with underlying mechanisms not unlike those highlighted by liability of newness arguments (Stinchcombe, 1965). The liability of newness is predicated on: 1) uncertainties that new organizations face when establishing new routines and operating procedures, 2) inefficiencies associated with inventing roles and structuring relationships, especially when establishing cooperation with unfamiliar actors, and 3) lack of legitimacy with external stakeholders. Analogous to these mechanisms, non-local ties require organizations to invest in learning about their new partner's resources and capabilities, its willingness and ability to share these effectively and in good faith (both with the organization and its other partners), while protecting themselves from possible partner noncooperation. Because partners forming non-local ties have no direct collaborative experience and possess potentially incompatible collaborative routines, such ties also require efforts from both companies to learn how to work effectively together, including

making investment in basic operational infrastructure and conflict resolution routines and building personal ties by managers across organizations that would that serve as conduits for information exchange (Zollo, Reuer, & Singh, 2002).

Non-local partnering may also affect relationships with local partners, which may interpret the non-local tie as an indication that the organization is unsatisfied with its local partners and preparing to abandon them for a new set of allies. Alternatively, local partners may suspect that the organization is withholding information or resources it acquires from the non-local partner, or sharing their shared knowledge and resources with the stranger. Such actions (real or perceived) can undermine local partners' trust, leading them to sanction the organization, withhold cooperation, or withdraw altogether from further collaboration.

These initial investments, coordination and adjustment costs, and risks of disruption to local partnerships suggest that, at least initially, an organization that increases its rate of non-local partnering (relative to local partnering) will experience a decline in its performance. Hence, we hypothesize:

H1: The greater the proportion of non-local ties in an organization's ego network at time t, the lower the organization's performance at time t+1.

It is important to note, however, that in contrast to non-local ties, local bridges will not suffer from the liability of strangers. Even new local bridges will be immune to this liability because they connect the focal organization to other members of the same cluster. Hence, the organization should be able to verify information about prospective partner's cooperativeness and resources through common allies prior to the formation of the relationship. Furthermore, existing partners of the focal organization will not be questioning its new partner selection decision because this relationship is formed with their own cluster of allies. Finally, cooperative routines between newly connected organizations will also be much easier to establish, as these organizations could draw on the collaborative experience and routines available within their own cluster.

The liability of newness can be overcome with time, as organizations develop internal routines, develop relationships with others, and establish their legitimacy in the eyes of the external stakeholders (Freeman, Carroll & Hannan, 1983; Hannan & Freeman, 1984). This suggests that the liability of strangers for non-local ties will too diminish as, over time, uncertainties about capabilities and motives are resolved, collaborative experience is gained, and legitimacy of the new tie established with local partners. Thus, subsequent collaboration with non-local partners should prove less risky and disruptive, and potentially more beneficial as the ties are deepened and regularized. In this case, the partners' mutual collaborative experience will solidify their relationship, helping both to develop and enjoy brokering opportunities within their respective local clusters. The non-local partner may also become tightly integrated into the focal organization's ego network, for example, by forming ties to each other's partners, enhancing information and resource exchange within the initial tie as norms of collaboration emerge amongst common allies. Even then, the non-local partner is likely to continue to provide access to more diverse information than a local bridge because of the magnitude of the structural gap it spans, ultimately contributing to the performance improvements of the focal organization. Hence, we predict the following:

H2: The greater proportion of non-local ties in an organization's ego network repeated at time t, the greater the organization's performance at time t+1.

Embeddedness: Moderating the Liability of Strangers

An organization's embeddedness within the network provides it with a set of opportunities and constraints that affects its ability to benefit from subsequent relationship-building strategies (e.g. Powell et al., 2005). Network embeddedness can be characterized at three levels (Gulati & Gargiulo, 1999): relational embeddedness, structural embeddedness and positional embeddedness. The ways in which organizations are embedded at these three levels can

influence their ability to learn about non-local partner's capabilities and intentions, work with them effectively, and manage their interactions with existing local partners.

Relational Embeddedness. Relational embeddedness refers to the degree of exclusivity that an organization affords to its partners in its portfolio of social ties. At one extreme, an organization can cooperate with a small group of allies via 'embedded' ties overlaid with extensive obligations and mutual trust. At the other extreme, an organization can spread its collaborative efforts across many 'arm's-length' ties without giving exclusivity to any single party in its relational portfolio. In general, the greater is the number of the partners collaborating with the focal organization, the more arms-length will its relationships with each individual partners be (Uzzi, 1996, 1997).

Arm's-length ties expose organizations to multiple partners and offer considerable flexibility in partner selection. The low commitment levels of arm's-length partners requires an organization, which is relying on them, to be constantly vigilant of their cooperative intentions and actions, equipping it to quickly detect partner non-cooperation, and requiring it to develop methods for securing some levels of partner loyalty in arms-length transactions. These skills should also assist organizations in mitigating the risks of non-local ties both when they are formed for the first time and repeated. In addition, if a non-local tie should sour, its impact on the organization is mitigated by the diversification of relational risk across a large number of local partners, as well as by the ability to quickly replace individual arm's length ties without affecting other relationships. In contrast, the mutual commitments of embedded ties obviate the need for organizations to develop such skills, leaving them ill-prepared to establish new and manage repeated non-local ties. Hence, arm's length relationships should lower the negative effects of the liability of strangers as the organization forms a non-local tie for the first time, and augment the positive effects of repeating such ties:

H3a: Arm's-length local ties dampen the negative effect of an organization's proportion of non-local

ties at time t on its performance at time t+1.

H3b: Arm's-length local ties amplify the positive effect of an organization's proportion of repeat non-local ties at time t on its performance at time t+1.

Structural Embeddedness. An oft-invoked distinction among ego networks is based on the presence of structural holes. An organization's ego network is considered open when its partners tend not to be partners themselves. In this case, the organization spans structural holes between unconnected alters (Burt, 1992). In contrast, an ego network is considered closed, when an organization's partners are also partners themselves (Coleman, 1990). The structure of an ego networks influences the properties of information reaching organizations, that is closed networks tend to contain homogenous information (what is known by one organization is known by all others); whereas, open networks contain heterogeneous information (what is known by one network member is different from what is known by the others). This distinction, however, fails to account for the possibility that an organization can have structural holes in its network, but have no non-local ties. For example, in Figure 1 (Scenario 1) organization C1 spans a structural hole between C3 and C4, but since this gap is spanned by a local bridge, it is unlikely to provide C1 with the same opportunities for brokerage as a non-local tie C1-A1 (Scenario 2).

In closed clusters, organizations develop the norms of reciprocity, trust in one another, and have a shared identity, all of which lead to a high level of cooperation amongst the members. Within such groups, information about uncooperative partners disseminates quickly, and its members may mount collective action to foster greater conformity to agreed-upon norms, reducing the tendency of each individual member of the cluster to behave opportunistically (Walker et al., 1997). Consequently, by reducing the likelihood that partners will attempt to take advantage of each other and by increasing their ability to detect opportunistic actions, closure makes it possible for cluster members to protect themselves from exploitation (or risks of non-cooperation) from non-local partners. Open local clusters (such cluster A on Figure 1) afford no such collective governance, exposing organizations to risks of non-collaboration from both its

non-local and local partners. Collaborative norms in closed clusters also facilitate quick integration of the new members, as they become indoctrinated into ways members of the cluster do business with each other and the informal rules that govern these interactions. Hence, by simultaneously increasing in an organization's potential to benefit from access to novel information and resources as well as by providing a governance mechanism through which non-local partners' risks are balanced with the security of closure amongst local partners, closed ego networks should increase an organization's ability to benefit from non-local partners both initially, as well as more rapidly realize benefits from repeating these ties.

H4a: Closed ego networks dampen the negative effect of an organization's proportion of non-local ties at time t on its performance at time t+1.

H4b: Closed ego networks amplify the positive effect of an organization's proportion of repeat non-local ties at time t on its performance at time t+1.

Positional Embeddedness. Positional embeddedness is reflected in centrality or status of organizations. Status influences an organization's ability to avoid the liability of strangers by enhancing its access to information about the resources, capabilities and cooperativeness of potential non-local partners (even those to which they are not directly or indirectly connected), as well as lowering the likelihood that its non-local partners will behave opportunistically. High status organizations possess more extensive ties and are tied to other well-connected organizations (Bonacich, 1987). As a result, high status organizations enjoy superior access to information circulating within the industry network, helping them assess potential non-local partners' records of cooperation and resource endowments.

High status also moderates the liability of strangers by increasing non-local partners' motivation to cooperate, even at the expense of their own short-term interests. The visibility and prestige of high status organizations and those of their relationships make them attractive partners to organizations wishing to enhance their own reputation in the network (Podolny, 1993). By helping generate superior results for a high status organization, a non-local partner can

quickly upgrade its standing in the network; failure to deliver in such a relationship can quickly result public ruin. Consequently, non-local partners have strong incentives to invest in successful outcomes and avoid actions that might undermine the relationship with a high status alter, hence the risks of non-local tie formation would be lower and the probability of value creation in the repeat non-local tie will be higher. For the same reasons, a high status organization's local partners are less likely to question its non-local partnerships, enabling high status organizations to more easily integrate non-local partners into its existing network of local ties.

According to the homphily principle (McPherson, Smith-Lovin and Cook, 2001), high status organizations tend to form relationships with other high status partners, hence even the non-local partners of the focal high status organization would tend to be of high status themselves. Since high-status organizations have high visibility in the network, both the focal organization and its prospective non-local partner can easier gather information about each other through vicarious observation prior to the formation of the relationship. Hence, the partners would be better informed about each others' conduct and objectives and this *a priori* familiarity will help them to better align their interests and overcome the liability of strangers more quickly. Furthermore, as high status partners repeat their relationships, they would be likely to exhibit similar levels of commitment to the collective cause (Chung, Singh and Lee, 2000), which will allow them to unlock greater value from this tie.

In summary, high status enhances an organization's ability to obtain information on the capabilities and cooperativeness of potential non-local partners, motivates non-local partners to cooperate and facilitates non-local tie formation with other high-status partners. This enables high status organizations to benefit from non-local partners initially, as well as more rapidly realize benefits from repeating non-local ties.

H5a: Status dampens the negative effect of an organization's proportion of non-local ties at time t on its performance at time t+1.

H5b: Status amplifies the positive effect of an organization's proportion of repeat non-local ties at

time t on its performance at time t+1.

METHODS

Research Setting and Network Definition

We test the above hypotheses using the data on syndicates formed by Canadian investment banks for underwriting both debt and equity public offerings between 1952 and 1989. This compilation was based on the Record of New Issues available yearly by FinancialData Group, with environmental control variables collected from the Toronto Stock Exchange annual reports as well as from the Canadian Sociometric Information and Management Database. Our extensive archival data collection was also supplemented with 23 interviews with investment bankers that were themselves responsible for creating underwriting syndicates.

Between 1953 and 1956, 119 unique investment banks were engaged in underwriting in Canada acting either as sole underwriters or as members of underwriting syndicates. Over time, this number grew and between 1986 and 1989 there were 180 investment banks active in Canada and underwriting public offerings either alone or as a part of underwriting teams. Our observation window covers the period during which raising equity in the capital markets superseded bank debt as the dominant mode of corporate financing (Davis & Mizruchi, 1999). Our comprehensive network data and longitudinal research design permit us to avoid the problem of network boundary setting (Doreian & Woodard, 1992), and to model partner selection over a period of time sufficient to yield meaningful variation in network structure and composition.

The process of new security syndication begins with an issuer choosing a lead bank to oversee underwriting responsibilities. Then, in most cases, the lead bank invites additional investment banks to participate as co-leads in an underwriting syndicate as a means of spreading risk and reaching a wider range of investors (Pollock, Porac, & Wade, 2004). In aggregate, these two types of partnering decisions – lead banks forming and colead banks joining underwriting

syndicates – generate the interorganizational syndicate network. The network thus comprised all dyadic lead-co-lead syndicate ties. Our interviews indicate that, in the Canadian context, co-leads typically have little if any direct contact within a given syndicate; their interactions are with the lead bank. Consequently, we do not consider the co-leads in a given syndicate to be partners.

Relationships among investment banks involve considerable risk; risk that is especially acute when the banks have no prior direct or indirect collaborative experience with each other. Underwriters bring much more than financial resources to syndicates: they contribute investor contacts, distribution capabilities, industry specific skills and knowledge, syndication management skills, and so on (Pollock et al., 2004). Untested non-local partners may be unable to supply anticipated resources and capabilities, and/or their interests may differ from the lead bank's, resulting in uncooperative behaviors. A bank inviting a non-local partner to co-lead a syndicate thus risks taking on a ally that lacks the desired capabilities or will not employ them fully to the syndicate's benefit. When banks syndicate an issue, for instance, each underwriter is expected to distribute the issue to investor groups with different objectives and time horizons to increase the issue's trading. A non-local co-lead may not have anticipated access to required investors, or may prefer to reserve them for another deal of its own. Co-leads are also expected to reciprocate syndicate invitations by later extending invitations to syndicates that they organize (Li & Rowley, 2002). A non-local partner may, however, be unable to secure lucrative issues or may invite its own local partners to co-lead the best syndicate deals it subsequently leads. Additionally, underwriters are expected to share market and industry knowledge when collaborating on an issue. A non-local bank may, however, not possess unique knowledge or skills or may be unwilling to share them despite expectations (Shipilov, Rowley & Aharonson, 2006).

Despite these risks, roughly 9% percent of the co-leads that lead banks' selected for their syndicates were non-local partners. For example, as American, European and Japanese banks entered the Canadian market, they typically became non-local partners to Canadian banks, carrying with them expertise in, for example, underwriting issues for Canadian companies listed

abroad and foreign companies seeking financial resources in Canada. They also established non-local partnerships with other Canadian banks to distribute issues to different groups of investors within Canada and abroad, as well as learn about and obtain access to future underwriting opportunities in different regions and industries, knowledge of which was unavailable among their local partners.

Operationally, we constructed networks from adjacency matrices comprised of all lead-co-lead syndicate dyads for four-year moving periods. We used four-year windows for three reasons. First, syndicate ties represent only the visible manifestation of relationships; lead and co-lead banks participating in syndicates together in any given year are also likely to interact in other ways with each other in years proximate to the syndicate. Second, because syndicates can remain intact up to six months or more prior to the date of the offering, syndicates that conclude in any given year may have been formed in prior years. Third, the four-year window permits us to gauge more accurately and reliably the duration of network ties by incorporating information on repeated ties over a number of years.

Dependent Variable and Estimation

Our dependent variable was an investment bank's market share. High market share places underwriters at the top of the league table rankings by *Institutional Investor*, *Investment Dealers' Digest* and other publications used to compare different banks in an industry (Eccles & Crane, 1988; Podolny, 1993). Since underwriting fees and margins earned by the banks are relatively constant across the industry (a gross underwriting spread of seven percent is the norm) (Chen & Ritter, 2000), banks' profit increases, from a public offerings market, are derived from increases in their volume of underwriting transactions (Eccles & Crane, 1988; Ellis, Michaely & O'Hara, 2000).

We measured banks' market share in a given year by allocating the dollar value of each syndicate during that year among its members. For deals involving only a lead manager (i.e., with no syndicate), 100% of the offering's value was assigned to the bank. For syndicated deals, 50% of the deal's value was assigned to the lead bank and the remainder split equally among the co-

leads. To compute banks' market share, we then divided the value of each bank's deals in a given year by the total value of all deals in that year. We also examined several alternative market share specifications (e.g., equally splitting the value of the deal among all syndicate members; assigning 25 or 75% of the syndicate's value to lead managers). The average correlation among these specifications was close to 1 (r =.98, p<.01).

We estimated banks' market share using the following logarithmic growth model:

$$Ln(MS_{it+1}) = \alpha * Ln(MS_{it}) + \beta * X_{it} + \varepsilon \quad (1)$$

where MS_i *(Market Share)* is bank *i*'s performance, α is an adjustment parameter that indicates the dependence of current performance on prior performance, and β is a vector of parameters for the effects of independent and control variables. Inclusion of last year's performance (MS_{it}) to predict the current year's performance (MS_{it+1}) helps account for the possibility that the empirical models of banks' performance suffer from specification bias due to unobserved heterogeneity. The growth model was estimated on a pooled time-series dataset, with each bank contributing a panel based on the number of years it was active on the market. For example, if a bank had four years of data, it would contribute four observations. Altogether, we had 2,532 bank-years after taking into account the lagged dependent variable. Pooling repeated observations on the same banks is likely to violate the assumption of independence from observation to observation, and will result in the model's residuals being autocorrelated. Furthermore, in the model with lagged dependent variable, autocorrelation could generate biased estimates (Judge, Griffiths, Hill & Lee, 1985) and indeed the Woolridge's (2002) test for autocorrelation was significant (t =3.84, p<.01). Hence, we estimated random effects models with corrections for panel-specific autocorrelation. Analysis using fixed effects estimation provided results similar to those reported below.

Independent Variables

To test H1, we measured a bank's exposure to the liability of strangers as the *Proportion of Non-local Partners* (*PNLP*), defined as the proportion of syndicate ties a bank initiated in each four-year

network that were non-local. Operationally, we defined non-local partners as new partners, to which a bank had neither prior direct ties nor indirect ties via common partners. To compute this variable, we divided a bank's number of non-local partners in year t by the bank's total number of partners in that year. To test H2, we had to capture the extent to which a bank repeated ties to non-local partners. We labeled this variable *Proportion of Repeated Non-Local Partners* (*PRNLP*). We computed it by dividing a number of partners in year t, which started out as non-local relationships in year t – 1, by the total number of partners the bank had in year t.

Hypotheses 3a-b, 4a-b, and 5a-b were tested by interacting *PNLP* and *PRNLP* with measures of 1) the exclusivity of a bank's ties, 2) the number of structural holes in a bank's ego-network and 3) the centrality (status) of a bank in the industry. Exclusivity of ties was measured using the *First-Order Network Coupling* (*FONC*) index (Uzzi, 1996), which is computed as:

$$FONC_{it} = \sum_{j=1}^{J_t} (P_{ij})^2 \qquad (2)$$

where J_t is the number of partners that bank i has connections to in period t, and P_{ij} is the percentage of the total number of deals led by bank i and involving bank j. As *FONC* approaches zero, ties are dispersed among a large number of arm's-length partners; values close to one indicate concentration on a small number of embedded partners. We computed each bank's *FONC* for each four-year window, and assigned values to the final year of each period. Consistent with Uzzi (1999), we include both linear and quadratic term of *FONC* in our models.

Effective Size measure is often used to measure the closure or openness of an organization's ego network (Burt, 1992: 52). This measure is computed as $n–2k/n$, where n is the organization's number of partners and k is the number of ties among its partners (Borgatti, 1997). *Effective Size* near one, a bank's partners are typically interconnected and its ego network represents a closed network; values near n indicate that a bank's partners are not typically interconnected and its ego network is open. Unfortunately, we could not use this measure to test H4a-b because it conflates the effects of local bridges and non-local ties. Importantly, because,

by definition, non-local ties do not affect the number of ties among an organization's partners, they contribute to the openness but not the closure of an organization's ego network. We therefore modified the measure to capture *Local Effective Size* as follows:

$$\textit{Local Effective Size} = (n\text{-}S) - 2k/(n\text{-}S) \tag{3}$$

where S is a bank's number of non-local partners, n is its total number of partners, and k is the number of direct ties among its partners in a given four-year network. Subtracting S from n results in a measure of *Effective Size* based only on local bridging ties; hence we refer to the measure as *Local Effective Size*. Again, we computed each bank's *Local Effective Size* for each four-year window, and assigned the value to the final year of each four-year period.

Finally, we measured a bank's *Status* using Bonacich's (1987) eigenvector centrality. Given this specification, an investment bank's network status is a function of the number and the status of the banks with which it forms underwriting syndicates. In turn, the status of these partners is the function of the number and the status of their syndicate partners, and so on. We computed each bank's centrality for each four-year window, and assigned the value to the final year of each four-year period. In consistence with Podolny (1993, 1994), the beta-parameter was chosen as 75 percent of the reciprocal of the largest eigenvalue of the focal bank's ego-network matrix. The computed measure for each bank was normalized, dividing it by the maximum difference in each four-year network, to facilitate comparisons over time (Borgatti, Everett, & Freeman, 1999). While this approach, which relies on symmetric syndicate ties, is potentially less precise than one based on asymmetric tombstone rankings (see Podolny, 1993), it is consistent with past network-based measurement of status in investment and commercial banking (Baum et al., 2005; Li & Rowley, 2002; Jensen, 2003).

Control Variables

Many other factors may influence a bank's performance. Accordingly, we control for a baseline model that includes a range of bank attributes as well as industry level network and environmental characteristics. Unless noted otherwise, the control variables are time varying and

lagged one year to avoid simultaneity.

To control the size of each bank's network we calculated variable *Degree* which was equal to the number of public offering syndicates that it participated together with other banks. We also included a dummy control *No Non-Local Partners*, which is set to one if the bank did not have any non-local partners in the period under consideration. To control for the performance of the focal organization's partners, we computed a variable *Average Performance of Partners* as the sum of market shares of the focal organization's partners divided by the number of these partners. Experience in syndication activities could influence propensity of banks to form non-local ties, hence we include both linear and quadratic term for the variable *Network Experience*, which is set to the number of years that a bank was active in the syndication network. Since some banks left and re-entered the network at a later point in time, we included the variable *Time since Last Entry*, setting it to the number of years lapsed since a bank's last engagement in the syndication activities. To span a structural hole, an organization needs to have a minimum of two partners, that is, be a member of a triad. To control for the existence of simple three firm-triads in our network, we created a variable *Triad* set to 1 if the organization had two partners, and zero otherwise. Furthermore, we included a control variable *Proportion of Lead Debt-deals*, which is computed as the number of debt syndicates lead by a bank divided by the total number of issues in which it participated. This control indicates banks' reliance on leading debt syndicates, which tend to be smaller and less risky than equity issues in Canada.

At the industry level, we controlled for environmental *Uncertainty*, which was measured as the variance in the number of underwriting syndicates in the four-year window. The environmental munificence is controlled by including the annual dollar value of *Public Offering Market Size* and the *Number of Public Offering Syndicates* in each year. Finally, to control for variation in performance over time, we created decade dummy variables for deals taking place in 1950s, 1960s, 1970s and 1980s with the former category excluded as the comparison.[1]

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[1] Research on antecedents to non-local partnering suggests that organizations are more likely to enter non-local

Descriptive Statistics

Because H3a-b, H4a-b, and H5a-b involve interaction terms, we mean centered each main effect variable prior to constructing the interactions so as to lessen correlations between the interactions and their components. As an additional robustness check, we examined VIF factors for each main and interaction effect. In all models, VIF factors for all theoretical variables were well below 10.

Means, standard deviations and correlations for all variables are reported in Table 1. Although correlations among theoretical variable are generally low, correlations between some control variables are high (e.g. r =.93 between *Uncertainty* and *Number of Public Offering Syndicates*). The joint inclusion of these variables increases the VIF for *Uncertainty* to 13.3, the maximum value of VIF in our models. In a separate robustness analysis, we dropped these collinear control variables, but the results were unaltered in a substantive way. Hence, we chose to keep them.

Insert Table 1 about here

RESULTS

Table 2 reports the estimates for the effects of theoretical and control variables on banks' market share performance. Model 1 is a baseline that includes all control variables. Model 2 introduces *Proportion of Non-Local Partners*, and Model 3 introduces *Proportion of Repeat Non-Local Partners* to test H1 and H2, respectively. Models 4, 5 and 6 include interactions between *FONC*, *Local Effective Size* and *Status* with the *Proportion of Non-Local Partners* to test H3a, H4a and H5a. Models 7, 8 and 9 introduce interactions between these moderating variables and *Proportion of Repeat Non-Local*

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partnerships when their current performance departs from their own past performance (historic aspirations) and the performance of other similar organizations (social aspirations) (Baum et al., 2005). As a result, we were concerned that the performance characteristics of banks engaging in non-local partners would differ systematically from those that did not. To account for this possibility, we used an aspiration performance model to estimate time varying probabilities of engaging in non-local partnering for each bank, and included this estimate as a control in our models. Since the estimate for this control was insignificant in our full model, for simplicity we do not report analyses including it. Details on this variable's models and its derivation are available from the authors.

Partners to test H3b, H4b and H5b. Likelihood ratio tests given in Table 2 indicate that Model 9 is our best fitting model; we therefore focus our discussion on this model.

Estimates in Model 9 support all hypotheses except 3a-b, which posited that arms-length networks moderate the relationship between both non-local and repeat non-local partnering. H1 is supported by the significant negative coefficient for *Proportion of Non-Local Partners* (both in Model 2 and Model 9), whereas H2 is supported by a significant positive estimate for *Proportion of Repeat Non-Local Partners* (both in Model 3 and Model 9). Hence, while initiating non-local ties is detrimental for an organization's performance, their repetition enhances the organization's performance. Notably, in contrast to the negative coefficient for *Proportion of Non-Local Partners*, the main effect of *Local Effective Size* is significantly positive. Thus, non-local ties and local bridges, which are not typically distinguished in the existing literature, seem to have markedly opposite effects.

H4a-b are supported by the significant, negative coefficients for *Local Effective Size* x *Proportion of Non-Local Partners* and *Local Effective Size* x *Proportion of Repeat Non-Local Partners*. In addition, H5a-b are supported by the significant, positive coefficients for *Status* x *Proportion of Non-Local Partners* and *Status* x *Proportion of Repeat Non-Local Partners*.

Insert Table 2 and Figures 2 and 3 about here

To determine whether the benefit of repeating non-local partners on performance outweighed the negative effect of their initiation, we conducted a post-hoc Wald's test comparing the coefficients for *Proportion of Non-local Partners* and *Proportion of Repeat Non-local Partners*. The test statistic indicated that the performance benefit of repeating non-local ties is significantly larger than the performance reduction resulting from their formation ($\chi^2 = 9.75$, $p<.01$). Hence, the net effect of non-local partnering on performance could be positive, if the organizations systematically repeat their relationships with non-local partners.

To gain a more nuanced understanding of the implications and magnitude of the

interaction effects with *Local Effective Size* and *Status*, we plotted the effects of these interactions on banks' market share in Figures 2 and 3. The figures illustrate the joint main and interactive effects of the *Local Effective Size* and *Status* interactions, respectively, for *Proportion of Non-local Partners* (PNLP) and *Proportion of Repeat Non-local Partners* (PRNLP) across the observed ranges of the variables based on coefficients from Model 9. In both figures, the effect magnitudes are substantial, particularly relative to the 1% average (3% s.d.) market share of banks in the sample.

Figure 2 shows the impact of the *Local Effective Size* interactions on banks' performance. The figure shows how the more intensively the banks with open ego networks form and renew non-local ties, the lower is these banks' performance. Notably, the negative effect of initial non-local tie formation on performance is not reversed for banks with closed ego networks; positions in such ego network only slightly buffer banks from the downside risks of non-local partnering. Repeated non-local ties do however raise the performance of banks with closed ego networks. These patterns are consistent with the idea that the trust and cooperation characteristic of closure facilitates integration and "localization" of non-local partners into a bank's ego network. Nevertheless, the highest performance goes to banks occupying open ego networks containing neither new nor repeated non-local ties.

Figure 3 depicts the *Status* interaction effects. This figure illustrates clearly that low status banks do not gain from initiating non-local ties. Rather, their performance improves only when they shun non-local partnerships. In contrast, high status banks' performance declines when they avoid non-local partners, but improves when they initiate and repeat ties with non-local partners. These results support our prediction that high status organizations benefit from non-local partners' non-redundant information and resources, while low status organizations do not.

DISCUSSION AND CONCLUSION

The formation of non-local ties permits organizations to establish new connections across

disparate regions of inter-organizational networks, exposing them to fresh information and resources unavailable to them in the past. Such cross-cluster connections also contribute to the evolution of networks, by binding previously separate clusters together. Despite their importance, the performance consequences of non-local ties have been under-researched, in part due to their conflation with local bridging ties in the existing literature. This study is the first to separate local bridges from non-local ties theoretically and empirically; it also is the first to posit a 'liability of strangers' for non-local ties, and to examine the conditioning effects of relational, structural and positional embeddedness on the relationship between non-local ties and performance.

Since non-local ties are much riskier than any other types of relationships, non-local partnering forces organizations to invest resources in building collaborative routines with unfamiliar allies and to integrate such allies into their local networks, so that the ties eventually become performance enhancing relationships. In this paper we examined these risks through the prism of the "liability of strangers", a concept advanced building upon Stinchcombe's (1965) insights on the risk and uncertainty surrounding new organizations. Our analysis of the syndication activity by Canadian investment banks between 1952 and 1990 revealed that, *ceteris paribus*, non-local partnering is detrimental to banks' performance, a result consistent with other studies examining the effects of risky organizational strategies and actions (e.g., Greve, 1999). We also find that with repetition, the banks more than recoup the early losses associated with initiating these ties, suggesting the positive net effect of non-local partnering on the performance of those organizations, that have enough slack resources to absorb the initial negative shocks of non-local partnering. Additionally, two features of banks' network positions – ego network closure and status – materially affected their ability to benefit from non-local ties initially, as well as to realize the benefits of their repetition more rapidly.

Our findings strongly demonstrate the importance of distinguishing non-local ties from local bridges. We find that that new non-local ties and existing local bridges have opposing

effects on performance, which prior research on structural holes has typically conflated both theoretically and empirically. Notably, our results imply that past studies may systematically underestimate the benefits of bridging ties by combining the opposing effects of local bridges and non-local ties. Moreover, we find that the performance consequences of non-local ties depend on banks' access to local bridges. Local bridges and non-local ties thus not only exert distinct influences on organizational performance, they also condition each other's benefits. This finding could add to the debate between the effects of structural holes on performance (cf. Burt, 2005; Ahuja, 2000; Shipilov, 2006; Rowley et al, 2000): in light of our results, whether or not organizations actually benefit from brokering activities seems to depend on the characteristics of the bridging ties (whether they local bridges or non-local ties) and on the interaction between the number of local bridges and non-local ties in an organization's ego network.

In a related vein, our findings highlight the importance of complementarities in organizations' network strategies; that is, particular network building strategies (e.g., non-local partnering) improve performance only when combined with particular network positions, such as ego network closure, which provide organizations with benefits complementary to those obtained from non-local partnering. For example, as Figure 2 illustrates, a bank that occupies an open ego network, and thus already enjoys some access to diverse information and resources through local bridging ties, fails to improve performance when it either forms or repeats non-local ties, with too provide banks with access to unconnected allies, albeit more distant ones. In contrast, banks with closed ego networks are both buffered from the liability of strangers, and benefit from the repetition of non-local ties. This occurs because the benefits of closure and those of non-local partnering are complementary to each other: while closure enforces cooperative norms and facilitates resource exchanges within the cluster, non-local ties channel heterogeneous information and resources into this cluster from the distant network neighborhoods. Consistent with these findings, Rowley et al. (2000) showed that organizations occupying closed ego networks benefited from building such networks by weak, as opposed to

strong, ties.

Additionally, as seen in Figure 3, performance of low status banks declines as they establish and renew non-local ties. Indeed, low status banks' performance improves only when they exclusively build ties to local allies. In contrast, high status banks improve their performance as a result of non-local partnering, due to their ability to assess non-local partners prior to the formation of the relationships and higher motivation of non-local partners to succeed in a highly visible relationship with a high status ally. More importantly, high status banks extract greater benefit from the repetition of a non-local tie than from its initial formation. This suggests that high status organizations too need time in order to establish collaborative routines with non-local partners for the extraction of full benefits from these relationships. In contrast, while low status banks that engage exclusively in local partnering face the risk of overembeddedness, formation of repeat ties with local allies shields them from the risks of non-local partnering. It seems that the risks of overembeddedness for low status banks are less salient than those associated with the liabilities of strangers in non-local relationships, hence low status organizations seem to be better off staying within the circle of their past partners and not expanding their networks outside of this circle. We thus illuminate a potentially key constraint on the ability of low status organizations to improve their network positions: Because their partnering opportunities and resources tend to be limited, low status organizations benefit more from local partnering with past partners and their partners' partners than from engaging in the exploration of non-local relationships. Extending their network through non-local ties drains low status organizations' resources and the cost of overcoming the liability of strangers is likely to outweigh the potential benefit of access to information and resources from beyond their local networks.

The benefits to high status organizations stemming from non-local ties may also reflect the operation of a Mathew Effect: the higher is the status of the organization, the more likely it is to benefit from building shortcuts to different network clusters, the more this will solidify the

position of a high status organization as a "hub" in the network that connects disparate network clusters. If the formation of non-local ties enhances an organization's network position, then low status organizations will not be very successful in doing so and hence will remain peripheral network participants. Ego network closure shields low status organizations from the liability of strangers, but these benefits will be more limited than those obtained by high status organizations engaging in non-local partnering. Thus, since network change through the formation of non-local ties is beneficial to high status organizations, network change and control will also tend to remain with these organizations (Baum et al., 2003).

As with all single industry studies, we must be careful generalizing our findings. Investment banking has features that do not characterize all industries, and this likely affects, potentially greatly, the benefits of non-local partnering. Investment banks acquire network advantage by occupying central positions between unconnected partners (Rowley & Baum, 2004). In other industries, however, positions densely interconnected with partners rather than positions between them provide network advantage (Ahuja, 2000; Rowley et al., 2000; Walker et al. 1997). It is likely that organizations will benefit differently in such distinct competitive settings. Generalizing our results may thus require identification of contingencies affecting the benefits of non-local ties, as well as their relative benefits to organizations with different relational attributes.

Although recent studies have increased our understanding of antecedents of non-local tie formation, we have little insight into whether and when organizations are likely to benefit from such risky partnering strategies. In the present study we introduced the idea of a "liability of strangers" to portray the challenges organizations face in the pursuit of high-risk, non-local ties in contrast to lower-risk, local ties with past partners and their partners. We also examined how the opportunities and constraints in an organization's network positions affect their ability to identify potential non-local partners with compatible capabilities and intentions, work with them effectively, manage their interactions with existing local partners, and thus becoming more likely to benefit from partnering with them. We hope that the ideas and results in this paper will

provide a building block in our understanding of the consequences of risk taking in partnering strategies and of the sources of brokerage advantage in the inter-organizational networks.

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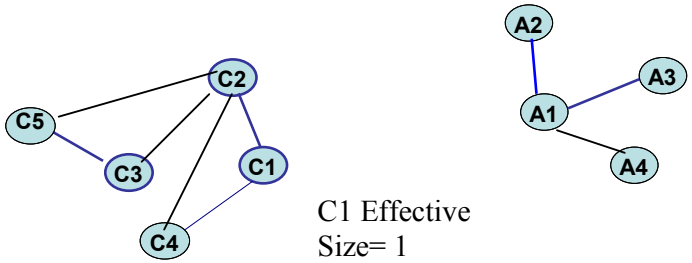
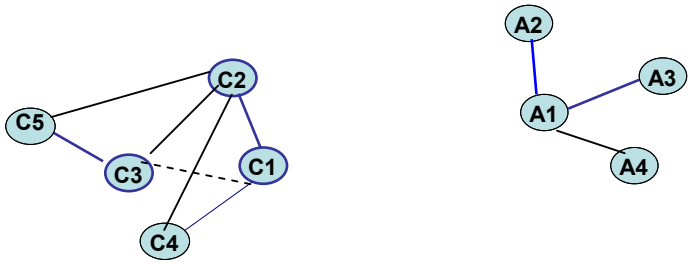
FIGURE 1:
LOCAL BRIDGES AND NON-LOCAL TIES

Time 1



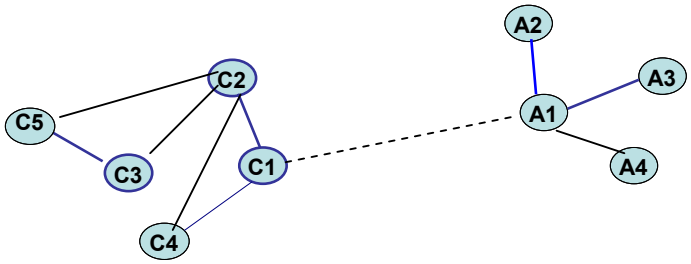
C1 Effective Size= 1

Time 2: Scenario 1



C1-C3 is a local bridge.
C1 Effective Size = 1.33

Time 2: Scenario 2



C1-A1 is a non-local tie.
C1 Effective Size = 2.33

TABLE 1:
DESCRIPTIVE STATISTICS

		Mean	s.d.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12
1	**Market share (t+1)**	0.01	0.03	0.00	0.34												
2	**Proportion of Non-Local Partners (PNLP)** [a]	0.00	0.18	-0.40	0.97	0.03											
3	**Proportion of Repeat Non-Local Partners (PRNLP)** [a]	0.00	0.29	-0.69	0.96	-0.04	-0.02										
4	**First-Order Network Coupling (FONC)** [a]	0.00	0.34	-0.66	0.50	-0.38	-0.15	0.03									
5	**First-Order Network Coupling Squared**	0.12	0.08	0.00	0.44	0.38	-0.04	-0.08	-0.18								
6	**Local Effective Size** [a]	0.00	3.59	-3.92	29.75	0.51	-0.10	-0.05	-0.64	0.43							
7	**Status** [a]	0.00	14.59	-13.75	93.74	0.57	0.01	-0.11	-0.47	0.39	0.69						
8	**PNLPx FONC**	-0.01	0.05	-0.34	0.41	0.06	0.09	0.01	-0.13	-0.08	0.18	0.08					
9	**PNLPx Local Effective Size**	-0.07	0.46	-6.05	2.33	-0.05	-0.58	0.02	0.21	0.08	-0.12	-0.06	-0.40				
10	**PNLPxStatus**	0.02	1.59	-17.64	29.47	-0.02	-0.37	0.02	0.11	0.02	-0.08	-0.07	-0.29	0.53			
11	**PRNLPxFONC**	0.00	0.10	-0.45	0.47	0.07	0.00	0.33	-0.02	0.02	0.05	0.10	0.00	0.02	-0.01		
12	**PRNLPx Local Effective Size**	-0.05	0.71	-6.87	9.04	-0.16	0.01	-0.40	0.06	-0.05	-0.07	-0.16	0.00	-0.04	0.01	-0.69	
13	**PRNLPxStatus**	-0.46	2.51	-21.88	27.84	-0.19	0.01	-0.43	0.16	-0.11	-0.18	-0.26	-0.04	-0.02	0.06	-0.52	0.72
14	**Market Share (t)**	0.01	0.03	0.00	0.34	0.92	0.03	-0.04	-0.38	0.37	0.50	0.57	0.06	-0.05	-0.03	0.08	-0.16
15	**Degree**	14.31	37.27	1.00	643.00	0.27	0.01	-0.05	-0.36	0.18	0.69	0.68	0.07	-0.12	-0.03	0.04	0.00
16	**No Non-local Partners**	0.78	0.41	0.00	1.00	-0.22	-0.65	0.04	0.40	-0.10	-0.19	-0.27	0.10	0.33	0.16	0.00	-0.02
17	**Average Performance of Partners**	0.03	0.04	0.00	0.34	0.06	-0.04	-0.12	-0.09	0.02	0.01	0.07	0.05	0.01	0.00	0.01	0.01
18	**Network Experience**	7.25	6.88	1.00	33.00	0.24	0.07	-0.10	-0.40	0.19	0.40	0.29	0.07	-0.05	-0.01	0.08	-0.04
19	**Network Experience Squared**	99.89	181.67	1.00	1089.00	0.21	0.04	-0.08	-0.34	0.18	0.39	0.26	0.06	-0.04	0.01	0.06	-0.02
20	**Time Since Last Entry**	5.77	6.04	1.00	33.00	0.32	0.08	-0.14	-0.45	0.25	0.47	0.39	0.09	-0.06	-0.02	0.09	-0.07
21	**Triad**	0.18	0.38	0.00	1.00	-0.10	0.05	0.03	-0.09	-0.56	-0.18	-0.16	0.07	-0.03	-0.02	-0.02	0.01
22	**Proportion of Lead Debt-deals**	0.25	0.31	0.00	1.00	-0.03	0.03	0.22	-0.09	-0.04	0.09	0.03	0.04	-0.08	-0.02	0.16	-0.14
23	**Public Offering Market Size**	9.34E+10	2.05E+11	3.32E+09	7.60E+11	-0.07	0.00	-0.01	0.01	0.02	0.00	-0.01	0.01	-0.01	-0.01	-0.05	0.05
24	**Number of Public Offering Syndicates**	113.72	125.28	20.00	444.00	-0.09	0.01	-0.01	0.01	0.01	0.00	-0.01	0.01	-0.02	-0.02	-0.07	0.07
25	**Uncertainty**	122.00	153.86	11.39	530.23	-0.09	-0.01	-0.01	0.01	0.00	0.00	-0.01	0.02	-0.02	-0.01	-0.07	0.08
26	**1960s**	0.29	0.45	0.00	1.00	0.01	0.01	0.00	0.01	-0.03	-0.01	0.00	-0.03	0.02	0.00	-0.02	0.04
27	**1970s**	0.24	0.43	0.00	1.00	0.07	0.02	0.02	-0.01	0.10	0.00	0.01	0.03	0.06	0.02	0.14	-0.18
28	**1980s**	0.36	0.48	0.00	1.00	-0.09	-0.04	-0.01	0.00	0.00	0.01	-0.01	-0.01	-0.07	0.01	-0.09	0.10

	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
14	-0.21														
15	-0.05	0.29													
16	0.02	-0.22	-0.29												
17	0.02	0.06	-0.06	0.08											
18	-0.12	0.27	0.32	-0.25	0.12										
19	-0.11	0.23	0.35	-0.24	0.09	0.94									
20	-0.17	0.34	0.39	-0.25	0.13	0.84	0.81								
21	0.05	-0.11	-0.14	0.04	0.01	-0.09	-0.10	-0.10							
22	-0.12	-0.02	0.13	-0.08	-0.20	0.05	0.06	0.03	0.00						
23	0.04	-0.07	0.17	-0.05	-0.22	0.11	0.14	0.05	-0.04	0.05					
24	0.05	-0.07	0.19	-0.06	-0.23	0.12	0.15	0.04	-0.03	0.11	0.85				
25	0.07	-0.07	0.21	-0.06	-0.24	0.15	0.18	0.07	-0.04	0.13	0.89	0.93			
26	0.04	0.00	-0.13	-0.02	-0.03	-0.11	-0.18	-0.03	0.02	-0.03	-0.28	-0.34	-0.35		
27	-0.18	0.07	-0.05	0.14	0.24	0.11	0.08	0.10	-0.02	-0.14	-0.22	-0.26	-0.23	-0.36	
28	0.10	-0.07	0.20	-0.10	-0.22	0.17	0.21	0.07	-0.02	0.18	0.56	0.67	0.69	-0.48	-0.42

TABLE 2:
GLS REGRESSION RESULTS OF CANADIAN INVESTMENT BANK MARKET SHARE PERFORMANCE

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
H1: Proportion of Non-local Partners (PNLP)		-0.003*	-0.003*	-0.003*	-0.005*	-0.003†	-0.003†	-0.004†	-0.004*
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
H2: Proportion of Repeat Non-local Partners (PRNLP)			0.001†	0.001†	0.001†	0.001*	0.00100	0.00100	0.003**
			(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
H3a: Proportion of Non-local Partners × First-Order Network Coupling				0.00100	-0.00100	0.00000	0.00000	0.00000	0.00100
				(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
H4a: Proportion of Non-local Partners × Local Effective Size					-0.001	-0.002*	-0.002*	-0.002*	-0.001*
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
H5a: Proportion of Non-local Partners × Status						0.0004**	0.0004**	0.0004**	0.0004**
						(0.000)	(0.000)	(0.000)	(0.000)
H3b: Proportion of Repeat Non-local Partners × First-Order Network Coupling							-0.00100	-0.00300	-0.00300
							(0.002)	(0.003)	(0.003)
H4b: Proportion of Repeat Non-local Partners × Local Effective Size								-0.00100	-0.002**
								(0.000)	(0.001)
H5b: Proportion of Repeat Non-local Partners × Status									0.001**
									(0.000)
First-Order Network Coupling (FONC)	0.004**	0.004**	0.004**	0.004**	0.004**	0.005**	0.005**	0.005**	0.005**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
First-Order Network Coupling Squared	0.009*	0.009*	0.009*	0.009*	0.010*	0.009*	0.009*	0.010*	0.008*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Local Effective Size	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Status	0.0002**	0.0002**	0.0002**	0.0002**	0.0002**	0.0002**	0.0002**	0.0002**	0.0002**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Market share (t)	0.800**	0.799**	0.798**	0.798**	0.798**	0.798**	0.798**	0.797**	0.793**
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Degree	-0.0001**	-0.0001**	-0.0001**	-0.0001**	-0.0001**	-0.0001**	-0.0001**	-0.0001**	-0.0001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
No Non-local Partners	-0.003**	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.005**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Average Performance of Partners	0.00600	0.00600	0.00700	0.00700	0.00600	0.00600	0.00600	0.00700	0.00500
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Network Experience	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*	0.0001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Network Experience Squared [a]	-0.001*	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**	-0.001**	-0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Time Since Last Entry	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001†
	(0.0001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.0000)
Triad	0.003**	0.003**	0.003**	0.003**	0.003**	0.003**	0.003**	0.003**	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Proportion of Lead Debt-deals	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00001	0.0001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Public Offering Market Size	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of Public Offering Syndicates [a]	0.03330	0.03330	0.03330	0.03330	0.03330	0.03330	0.03330	0.03330	0.03330
	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
Uncertainty [a]	-0.01000	-0.01000	-0.01000	-0.01000	-0.01000	-0.01000	-0.01000	-0.01000	-0.01000
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
1960s	-0.001†	-0.001†	-0.001*	-0.001*	-0.001†	-0.001*	-0.001*	-0.001*	-0.001*
	(0.005)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
1970s	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00100
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)
1980s	0.00000	-0.00100	-0.00100	-0.00100	-0.00100	-0.00100	-0.00100	-0.00100	-0.00100
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Intercept	0.005**	0.005**	0.005**	0.005**	0.005**	0.005**	0.005**	0.005**	0.006**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Likelihood ratio/ sig as compared to previous model	7817	7819*	7820	7820	7820	7825**	7825	7826	7844**

Notes:
[a] Coefficient is scaled by 1000.
b. Standard errors in brackets. N=2532.
c. † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$.

FIGURE 2:
Hypotheses 4a-b: Local Effective Size Interactions

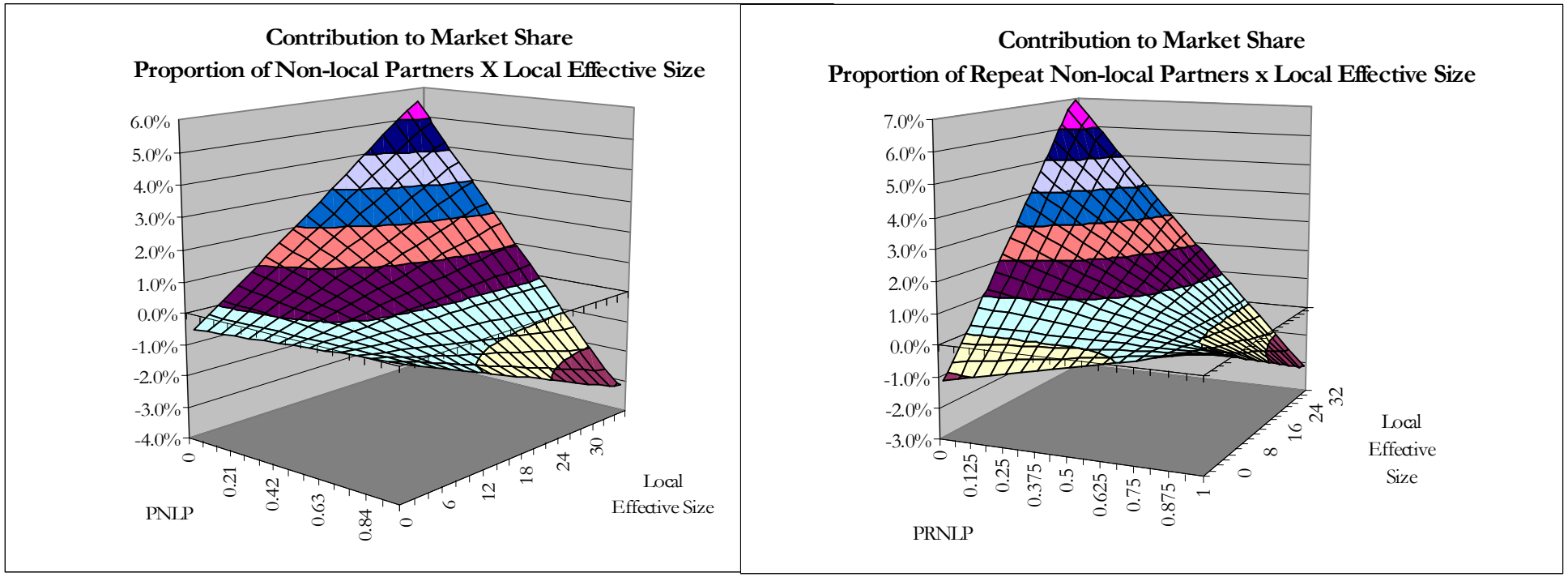
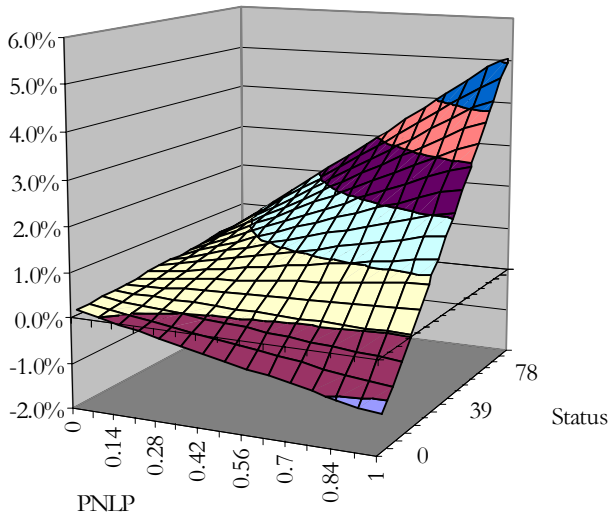
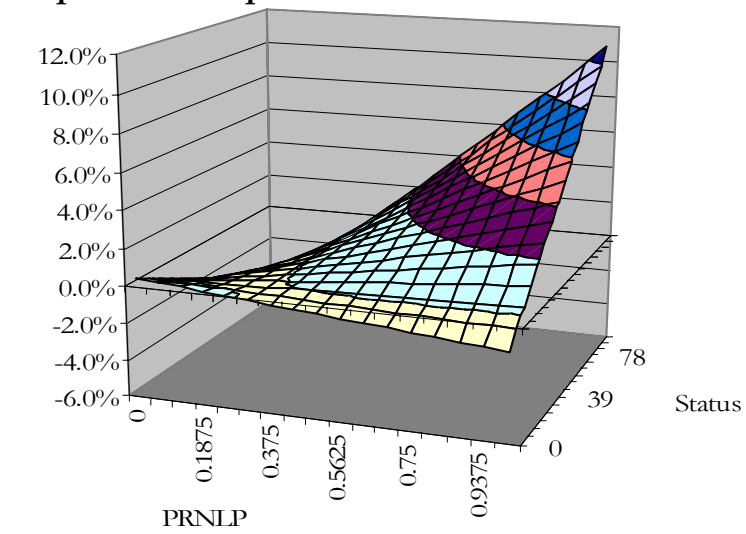


FIGURE 3:
Hypotheses 5a-b: Status Interactions





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