Friendships among Competitors in the Sydney Hotel Industry[1]

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Friendships with competitors can improve the performance of organizations through the mechanisms of enhanced collaboration, mitigated competition, and better information exchange. Moreover, these benefits are best achieved when competing managers are embedded in a cohesive network of friendships (i.e., one with many friendships among competitors), since cohesion facilitates the verification of information culled from the network, eliminates the structural holes faced by customers, and facilitates the normative control of competitors. The first part of this analysis examines the performance implications of the friendship-network structure within the Sydney hotel industry, with performance being the yield (i.e., revenue per available room) of a given hotel. This shows that friendships with competitors lead to dramatic improvements in hotel yields. Performance is further improved if a manager's competitors are themselves friends, evidencing the benefit of cohesive friendship networks. The second part of the analysis examines the structure of friendship ties among hotel managers and shows that friendships are more likely between managers who are competitors.

INTRODUCTION

Organization theorists are heeding Granovetter's (1985) call to supplant atomistic analyses of economic activity with those that pay more attention

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to the social structure in which such activity is embedded. However, despite the variety of ties that have been examined, analyses to date have stopped short of incorporating many types of informal, interpersonal relationships that also facilitate the economic interactions of organizations. In particular, while some research exists regarding friendship ties within organizations (e.g., Lincoln and Miller 1979; Krackhardt 1987), virtually no analysis has addressed the interorganizational context, where friendship ties are very much characteristic of the social structure to which Granovetter referred. This article focuses explicitly on the benefits associated with friendships among managers of competing organizations. Specifically, we expect that such friendships will improve organizational performance by increasing the potential for collaboration, for beneficial norms of conduct within competitive spheres, and for the enhanced flow of information.

The lack of attention to competitor friendship is understandable since personalized modes of interaction between competing organizations long have been viewed as illegitimate. Consider Adam Smith's ([1776] 1976) warning that "people of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public." Smith's statement reflects what has been taken for granted by many who are interested in the theory and practice of competition: friendships among competitors are vehicles for collusion. However, as beliefs have evolved about the importance of striking a balance between competition and collaboration, and about the nature of information flows, so has the affective orientation toward more personalized modes of competitor interaction (Teece 1994). It must now be recognized that in addition to facilitating collusion, friendships among competing managers may also yield more legitimate benefits by improving collaboration and information sharing.

It is clear from the above that we expect friendships between managers to be instrumental for economic purposes. However, we also recognize that there are noninstrumental causes and effects of friendships, and that our treatment of the friendship structure must incorporate these factors. Our view of friendships, then, is that they are multiplex and are constituted of both sentimental and instrumental elements. This is consistent with the position taken in the literature on the embeddedness of economic

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activity, which identifies the multiplex character of relationships as fundamental for their influence (Granovetter 1985; Uzzi 1996, 1999; DiMaggio and Louch 1998). At the same time, there is some tension between this position and the paradigmatic view of friendship, which holds that friendships are based on elective affinity and emphasizes the distinction between sentimentality and instrumentality (Silver 1990). The relationships we consider are between the extremes of pure sentimentality and pure instrumentality: managers differentiate between individuals when choosing friends, but the structural positions of the individuals also matter.

This multiplex character of friendships among competing managers has important implications for their expected effects on organizational performance. On the one hand, the expected benefits of these relationships are predicated on the products of sentimentality, such as trust, empathy and reciprocity. However, the simultaneous presence of instrumentality suggests that benefits to friendships with competitors may be constrained by the mixed motives of the individuals. While "pure" friends are likely to be open and honest in their dealings with one another, "pure" competitors are not. This motivates us to consider the broader structure of friendship ties among groups of competitors. In particular we argue that networks of competitor friendships should be more efficacious when they are cohesive (i.e., contain friendship ties to others who are themselves friends). On the one hand, cohesive networks close the structural holes faced by customers, creating positive performance implications for organizations. Cohesive friendship networks also support the social enforcement of anticompetitive norms and provide for verification of information obtained from competitors. These latter benefits appear precisely because the friends that we study are also competitors, and competitors have some incentive to mislead or to defect from cooperative relationships.

Several features of this study combine to make it a unique contribution to the rapidly growing literature on social ties across organizations. First, our focus is on friendship ties among managers, while the extant literature has been criticized for overemphasizing formal interorganizational ties such as board interlocks, joint ventures, and buyer-supplier relationships (Haunschild 1994; Geletkanycz and Hambrick 1997; but see Coser, Kadushin, and Powell 1982). As suggested above, the multiplex character of friendships among managers creates increased levels of trust, empathy, and reciprocity and enables mechanisms of social control that may be missing from formal ties. Second, the ties that we study are horizontal between similar organizations that compete with one another. Such ties differ from those between buyers and suppliers or lenders and borrowers (which are vertical), board interlocks (which may link organizations with no direct economic interaction), and joint ventures (which often combine organizations with different but synergistic skills and resources, even

when those organizations are in the same industry). Horizontal ties operate and are formed by different processes than are vertical ties (see Baker and Faulkner [1993] and Geletkanycz and Hambrick [1997] for analyses of horizontal networks). Third, although we describe the intermediating mechanisms, we ultimately relate friendships among competitors to a broad measure of economic performance, a hotel's yield, which is the most widely used metric for evaluating the performance of hotels and their managers. Recent articles have shown positive effects of interorganizational ties on important performance measures such as failure, time to initial public offering, and the rate paid for bank loans (Uzzi 1996; Stuart, Hoang, and Hybels 1999; Uzzi 1999). Still, there is a need for more research showing how social structure affects the economic "bottom line."

In the next section, we describe in detail the benefits expected from friendships with competitors and from friendship networks with high levels of cohesion. We then argue that managers will recognize the expected benefits of friendships with competitors and bias their formation of friendship ties in favor of managers at competing organizations. Mirroring the theoretical arguments, our analysis consists of two closely related parts. First, we test predictions about the effect of friendships and cohesion on the performance of Sydney hotels. Our results indicate that hotels perform better if their managers have friendships with competitors and if those competitors are themselves friends. Second, we analyze the structure of friendships in this same industry to test the claim that managers are biased in favor of friendships with competitors. That analysis shows that friendships are more likely between managers whose hotels are close competitors (although friendships are also influenced by a host of noninstrumental factors). We also present a dynamic component of this analysis of the friendship structure, which examines managers' propensity to retain friends over time and to add friends to their respective friendship networks. Our evidence here suggests that existing friendships are more likely to persist, and new friendships are more likely to form, if the other individual manages a competing hotel.

FRIENDSHIPS WITH COMPETITORS

In this section, we outline the expected benefits of friendships with competitors, which can be placed into three broad categories: collaboration (which may create value for customers), mitigation of competition, and information exchange. In doing so, we present observations from our interviews with managers in the Sydney hotel industry and sometimes from interviews with, and writings by, participants in the U.S. hotel in-

dustry. These are intended to illustrate the hypothesized effects and not to substitute for the statistical analyses, which we present subsequently.

Collaboration

This discussion of collaboration receives pride of place in our presentation of the benefits of friendships with competitors because it is underemphasized in the traditional view that friendships among competitors breed collusion and therefore harm customers. There are many ways that competitors collaborate to add value for customers, and friendships between competitors may help in the process. Uzzi (1996) identifies joint problem solving as one advantage of ties between organizations that are embedded in social relationships, arguing that such ties improve feedback between organizations and therefore also improve their capacity to adjust to problems "on the fly." Friendship also can facilitate the recognition of shared interests and thereby contribute to overcoming the free-rider problem that inhibits many cooperative efforts (Hardin 1982). Consistent with this position, Montgomery's (1998) experiments show that individuals are more likely to behave cooperatively in a repeated prisoners' dilemma game if they are acting in the role of "friend," rather than the role of "businessperson."

The managers that we interviewed provided numerous examples of friendships between competitors as the basis for collective action to improve service to customers. Some suggested that regular social meetings between local competitors allow hotels to cooperate to attract large conventions to their part of the city. An even larger group told us that they would refer customers to friends at competing hotels when they were themselves overbooked. They explained that this was not done simply as a favor to a friend, but also because the friendship allowed a manager to trust that the referred customers would be well treated. A hotel manager in the U.S. industry claimed that sharing overflow customers was the most important benefit of friendships with competitors (while admitting that the institutional context of the U.S. industry created a taboo against discussing other benefits of friendships, such as mitigation of competition).

Mitigation of Competition

In addition to facilitating collaboration, friendships between competitors may also help to mitigate competition. At the extreme, there is explicit collusion. Dobbin and Dowd (1997) explain how friendly contact between competitors was the basis of price-fixing agreements in the 19th-century Massachusetts railroad industry. Podolny and Scott-Morton (1999) argue that social bonds among incumbents facilitated the maintenance of price-

fixing arrangements within European shipping cartels around the turn of the century. Price fixing was legal in the times and places of those two examples,[2] but Baker and Faulkner (1993) describe social networks as the basis of the illegal price-fixing conspiracies in the U.S. electric equipment industry in the 1950s. Similarly, a recently prosecuted price-fixing arrangement in the flexible polyurethane foam market in Queensland, Australia, developed from a friendship between managers of competing foam companies who met at an industry party and maintained their relationship with regular social lunches (ACCC 1998).

We want to be clear that there is no reason to believe that Sydney hoteliers are engaging in explicit collusion. In fact, our informants said nothing that suggested explicit collusion, and it would be nearly impossible to conceal completely a price-fixing scheme with as many participants as would be required in this industry. Further, the informants' willingness to freely reveal friendships with competitors is inconsistent with a network that supports illegal activity (Baker and Faulkner 1993). Explicit collusion, however, is not the only form of mitigated competition. In the following paragraphs, we focus on two other forms: tacit norms against aggressive competitive behavior, which are not illegal under Australian law,[3] and strategic awareness among competitors.

The importance of norms against aggressive competitive behavior in the hotel industry has long been recognized, as indicated by the advice of a leading consultant to the American industry during the first half of this century: "You must get together with your fellow-managers in each city, once a week if necessary, and talk rates. Stick to the idea that you can't control occupancy, but you can control rates. . . . Fight the situation by cooperating with your competitors in an effort to maintain your rates" (*Hotel Monthly* 1938). Because friendships are valued for their own sake, they provide the means to enforce norms that support a group's collective interests (Homans 1950; Coleman 1990). If a group member violates a norm, he or she can expect punishment in the form of less friendly treat-

[2] As Dobbin (1994) explains, the perceived desirability of price fixing varies across countries and over time.

[3] Support for this can be found in the Australian Competition and Consumer Commission's (ACCC) Merger Guidelines, which categorize "tacit price coordination" as lawful, although anticompetitive (ACCC 1993, sec. 5.8, 5.9). There is a subtle distinction between tacit price coordination and illegal price-fixing agreements, which "do not have to be in writing [and] could even be just a 'nod and wink' understanding that can take place anywhere—in the pub, on the golf course, or at an association meeting or social occasion" (ACCC 1997, sec. 1). The difference is an actual agreement or understanding to fix prices, as opposed to general norms against aggressive competition. To be sure, this is a grey area, as illustrated in the above-mentioned Foam Case, which the ACCC interpreted as "a warning to company executives that entertaining with rival executives can easily lead to illegal behaviour" (ACCC 1998, p. 1).

ment by other members of the group. In Homans's (1950) reanalysis of the bank-wiring-room study, men who violated the restriction of output norm were excluded from games and the sharing of candy. Perry (1998) observes that friends will avoid acting aggressively toward each other by the very nature of friendship. In his account of the competitive behavior of garbage collectors in the San Francisco Bay Area, friendship networks between competitors were sufficiently dense that it was difficult for a firm to find a target for competitive attacks. In the Sydney hotel industry, there was clearly a norm against price-cutting. Many managers expressed revulsion for the practice, and we therefore expect that price-cutters would receive social sanctions from competitor friends.

Awareness of a competitor's predisposition to respond to others' strategic moves can also facilitate tacit collusion. Familiarity through friendships may facilitate awareness of "strategic dispositions" (a term used by several of our informants) among competitors. Peteraf and Shanley (1997) argued that network ties between organizations contribute to strategic-group identity, which is a set of mutual understandings among members of an intraindustry group. Among the effects they identify for strong strategic-group identities are higher levels of collective action in the group, as well as more and better information sharing. Mutual understanding also can contribute to tacit collusion, particularly when it makes competitors aware that aggressive moves will bring retaliation (Axelrod 1984). Our informants often cited developing an understanding of competitors' strategic dispositions as a benefit of friendships with competitors. One manager described the regular dinner meetings among hotel managers in another Australian city and argued that the mutual awareness that developed from these social encounters was instrumental in avoiding bidding wars between hotels.

Information Exchange

Enhanced information exchange is another of the advantages of ties embedded in social relationships that was identified by Uzzi (1996, p. 678): "Information exchange in embedded ties is more proprietary and more tacit than the information exchanged at arm's length." An abundance of empirical evidence supports the idea that social ties facilitate information sharing. Galaskiewicz and Wasserman (1989) find that corporate giving of two firms is more similar if their giving officers know each other. Geletkanycz and Hambrick (1997) find that top management teams' intraindustry ties result in conformity to central tendencies of strategies within their industries, while extraindustry ties result in deviance from those central tendencies. At the same time, a number of studies have found that firms with board interlocks are more likely to exhibit similar behavior

(Davis 1991; Mizruchi 1992; Haunschild 1994; Palmer, Jennings, and Zhou 1993).

We take the general position that social ties facilitate information exchange further by arguing that friendship ties are especially supportive of effective information exchange and that the benefits of such exchanges are greater if the other organization is a competitor. The multiplex character of friendships between managers suggests that these relationships should be characterized by higher levels of trust and empathy, as well as by the existence of norms of reciprocity (Uzzi 1996), each of which should improve the depth and quality of the information that is exchanged. At the same time, we expect a greater overlap of interests among managers whose organizations compete most intensely, as these managers are attempting to meet demands of similar customers and resource suppliers. Therefore, a manager would place greater value on the information that flows from a friend if that friend manages a competing hotel.

In support of these propositions, our informants provided several examples of how important information could be acquired from a friend who is also a competitor. Most often, their accounts focused on information about market conditions. Managers share accounts of how much business, and what type of business, their hotels are conducting, or expecting to conduct. In at least three cases, competing managers reported the exchange of price and occupancy information on a daily basis. Apparently, friendships were important in the exchange of this type of information. Managers described other ways of discovering how a competing hotel was doing (such as posing as a customer and visiting that hotel, or waiting for publicly available data to arrive), but asking a friend was viewed as the easiest and most reliable method. In other instances, managers explained that information obtained from friends within the industry made them aware of industry trends, such as the planned entry of a new hotel to the market. It is also likely that friendships served as conduits for information concerning specific operating practices of the hotels, although this was seldom mentioned by our informants. One manager articulated the particular relevance of the information acquired from competitors: a hotel's most intense competitors face virtually the same market conditions, and as a result, the information collected by competitors is most useful. This can be contrasted with information from noncompetitors, which may be about serving a set of less relevant customers.

In summary, there appear to be numerous benefits of friendships among competitors. Such ties enhance the collaborative potential of competing organizations. They also mitigate competition through norms against aggression and awareness of competitors' strategic dispositions. Friendship also facilitates the sharing of information about market conditions, strategic possibilities, and operations. With these mechanisms in mind, we

hypothesize that managers' friendships with competitors will improve the economic performance of their organizations.

HYPOTHESIS 1.—*Managers' friendships with competitors will improve the performance of their organizations.*

COHESION IN NETWORKS OF FRIENDSHIPS AMONG COMPETITORS

As emphasized earlier, the relationships considered in this article are not purely sentimental, but include an important instrumental dimension. Therefore, the above benefits must be viewed in the context of the competitive relationships that are also present. Given this latter concern, we move past the dyad level of analysis and consider the broader network of friendship ties that exist among managers in competing organizations. One of the central questions relating to the performance implications of networks is whether it is better to have networks that are nonredundant (i.e., the others that an actor is tied to have few ties between them) or cohesive (i.e., the others that an actor is tied to are also tied to each other). The seminal arguments of Granovetter (1995) and Burt (1992) make an excellent case for the power of nonredundancy. However, an effective design for one type of network need not be effective for another. It is therefore necessary to consider the trade-off between nonredundancy and cohesion, specifically in the context of networks of friendships among competitors. We first consider the implications of nonredundancy and cohesion for social control and then for the acquisition of information from competitors.

Burt (1992) argues that a structural hole, which is the absence of a tie between two others that an actor is tied to, has powerful advantages for the actor. With a structural hole, an actor can play others off against one another. For example, a seller facing two buyers is in a stronger position if the buyers do not know each other and cannot compare the seller's different price quotes. Similarly, structural holes give an actor valuable autonomy from others' attempts to control it. Burt (1980, 1992, 1997) has found evidence for the advantage of structural holes in many different contexts. When applying the structural-holes argument to our context, however, the question of "autonomy from whom?" must be answered with care. As Burt (1997, p. 345) recognizes, the effect of a structural hole between actors depends on whether the actors are different (e.g., a seller and a buyer) or similar (e.g., two competitors): "structural holes among people who are similar allow outsiders to play the people against one another, which erodes the value of whatever social capital they hold." Burt (1992) provides evidence for this by showing that more concentrated

industries (presumably those with fewer structural holes between competitors) tend to be more profitable.

Following this argument, it is our position that the greatest benefit for Sydney hoteliers comes not from *maximizing* structural holes in the intra-industry friendship network, but from *minimizing* the structural holes faced by customers. The advantage to a hotelier of maintaining autonomy from competitors is limited. (We are hard pressed to imagine any realistic circumstances of two hotels "ganging up" on a third.) In contrast, the advantages of limiting the autonomy of customers are obvious. One informant described a tour operator that literally bargained with two hotels simultaneously—going back and forth between two telephones, one in each hand. This customer negotiated a room rate (in 1998) equal to $45 for a three-and-a-half-star hotel in Sydney, where the average rate for such a room was roughly $80.[4] Consider what might have happened if the two managers enjoyed a friendship tie. Rather than being driven down to their variable cost of production, they may have been able to stop the downward price spiral by some form of mutual agreement or understanding. In such cases, the benefit from minimizing structural holes faced by customers is obtained by maximizing friendships among competitors.

Another dimension of the nonredundancy/cohesion question concerns normative control. We argued previously that one advantage of friendships between competitors is that they can enforce norms against aggressive competition. But what types of networks are best at enforcing norms? Building on Simmel (1950), Krackhardt (1994) argues that cohesive networks are best for enforcing norms. The foundation of this argument is that the relationship is the basis for normative enforcement. The incentive against norm violation is that social relationships will be reduced or eliminated (Homans 1950). The capacity to use this relational form of norm enforcement is greatly enhanced by cohesive ties. To see this, compare a dyad (two actors tied to each other) to a triad (three actors, all tied to each other). If one actor in the dyad decides to punish the other by eliminating the relationship, the ultimate effect is the same for both punisher and punishee—both are isolated. In a triad, two actors can punish a third by cutting off relations and still maintain some form of a group. The implication is that groups of friends have more "normative capacity" than do isolated dyads. The utility of normative control favors cohesion over nonredundancy in networks of competitors.

Finally, we return to the issue of information exchange. We argued above that friendship ties facilitate information exchange, but how is this process affected by the cohesiveness of ties? Granovetter's (1995) well-

[4] Unless otherwise noted, textual references are to U.S. dollars. At the time of our study, the Australian dollar was approximately equal to $0.65 in U.S. dollars.

known strength-of-weak ties argument suggests that the amount of information that an actor receives is maximized by having a nonredundant network. With the reasonable assumption that the amount of contacts an actor can maintain is limited, the information the actor receives is maximized if its contacts are not themselves connected. Nonredundant ties bring unique information, whereas cohesive ties bring redundant information. The *amount* of information, however, must be contrasted with its *reliability*. Within networks of competitors, the possibility of obtaining misleading information is a risk. There may be a strategic advantage from misleading competitors, so information from competitors must be viewed with caution. Of course, if the competitor supplying the information is also a friend, there is an added element of trust. But there is no certainty that friends can always be trusted, particularly when stakes are high. When the veracity of information is in question, cohesive ties serve as a check on the information that is received. In summary, the filling of structural holes, the maintenance of normative control, and the reliable exchange of information all favor cohesive networks in our context.

HYPOTHESIS 2.—*The greater the cohesiveness of a manager's friendship network, the better the performance of his or her organization will be.*

This hypothesis posits a performance benefit for cohesion in a manager's own friendship network. However, cohesive friendships among competitors may benefit an organization even if its manager is not part of the friendship group. That is, some products of a cohesive friendship group among competitors may spill over beyond that group. In our context, this seems particularly likely for efforts related to tacit collusion, and for cooperative efforts aimed at attracting large conferences. Both of these activities produce "public goods" from which hotels will benefit irrespective of their contributions to them. Consider a hotel whose manager has no friendships with other managers but whose close competitors maintain relatively high prices by enforcing anticompetitive norms through a cohesive friendship network. This hotel may be able to free-ride on its competitors' anticompetitive norm by charging a price comparable to theirs (undercutting would produce only a fleeting benefit as the cohesive group would almost certainly respond with price cuts of their own). As the possibility that a hotel may free-ride on the cohesion of competitors does not preclude benefits from the cohesion of a manager's own friendship network, we test for both forms of cohesion effects.

HYPOTHESIS 3.—*The greater the cohesiveness of friendships among an organization's competitors, the better its performance will be.*

INFLUENCE ON THE STRUCTURE OF THE FRIENDSHIP NETWORK

As stated in the introduction, we expect that managers will consider the material benefit to their organizations (and indirectly to themselves) when forming professional friendships. This position does not disregard the affective component of friendship. The criteria for friendship formation that we envision are based substantially on elective affinity. Indeed, the organizational benefits from managers' friendships with competitors are predicated on trust, empathy, and reciprocity, which will not exist in relationships formed for purely instrumental purposes (Granovetter 1995; Burt 1992). Still, we expect that the material benefits will hold some sway when managers choose their friends. When predicting which managers will be friends, it is important to consider factors that may create positive affect, such as similarity, attractiveness, and opportunity for contact. Even after considering such factors, however, we believe that the degree of competition between the managers' organizations, and thus the potential benefit of the relationship, will predict the likelihood of a friendship forming.

HYPOTHESIS 4.—*The greater the degree of competition between two managers' organizations, the greater the likelihood that they will be friends.*

SETTING, SAMPLE, AND DATA

The setting for this research is the Sydney hotel industry. We began with a cohort of 51 hotels that cooperates with the Australian Hotel Association, New South Wales Division (AHA) to share data on hotel occupancy and yield rates. These hotels represent a complete niche within the industry. Competition among hotels is localized, with distinct competitive niches based on geography, luxury, and size (Baum and Mezias 1992). The hotels in the AHA sample represent Sydney's "international" hotels. They are luxurious, relatively large, and cater to international and domestic travelers. According to quality ratings supplied by the Australian Automobile Association, all hotels in this cohort are rated at least three and a half stars out of five, and all hotels in Sydney with four or more stars are in this cohort. Moreover, if our informants used the term "international hotel" during interviews, we asked to which hotels they were referring. They invariably responded: "the hotels on your list." We therefore conclude that the sample includes virtually all of Sydney's international hotels. Finally, note that the hotels in this cohort are economically important, comprising more than 14,000 rooms in 1998, with total room revenues (i.e., excluding

revenue from food, beverages, and entertainment) approximating $615 million.

Missing data has notable consequences for network analyses because each missing case removes the *N*-1 possible relationships with other network actors. We therefore followed Knoke and Kuklinski's (1982) advice and made persistent requests through multiple communication channels to encourage maximal participation of respondents. Of the 51 general managers (GMs), 36 agreed to participate in hour-long interviews during May of 1998. Of these interviews, 32 were attended by the GM, while four were attended by another member of the top management team. We sent the survey instrument by fax to those GMs who declined to be interviewed and received five faxed responses, bringing the total number of respondents to 41 (for a response rate in excess of 80% of the AHA cohort). One faxed response was excluded from the analysis because the respondent did not report friendship data, leaving 40 usable responses.[5] The missing hotels did not affect manager's identification of their own friends, which were allowed to be at hotels whose managers chose not to participate in the study. The cohesion measures, however, are based on the friendships of others and may be inaccurate if data from those others is missing. Granovetter (1976) shows that the proportion of ties between network actors can be estimated using random samples of the actors. Of course, the managers that responded to our requests for data do not represent a random sample, but they did not differ from those that responded in any way that we could ascertain. This, combined with our high response rate (which results in a sample that is large relative to the size of the whole network) gives us confidence that measures of cohesion based on the 40 usable responses are reasonable approximations of the true cohesion among the 51 hotels in the cohort.

Interviews were structured by a set of questions presupplied to interviewees. Early in the interview, each respondent was shown a list of the 51 hotels in the AHA cohort and asked to identify those hotels at which she had a friend on the top management team. A friend was defined as "someone who you like and would feel comfortable asking for information and/or a favor." Later in the interview, we asked respondents to list their hotel's most significant competitors, ranked in order of the intensity of competition. We also asked about the respondent's professional background, the chain affiliation of the hotel, and which other hotels the hotel had lost managers to or hired managers from in the last five years. We supplemented this survey data with data from two archival sources. In-

[5] There were no discernible differences in results depending on whether data were supplied by a manager other then the GM or whether they came from a faxed response. Therefore, we treat all responses equally in the results that we report.

formation on the star rating, size, and location of each hotel was obtained from the Australian Automobile Association, while the hotel performance data were supplied by the AHA.

ANALYSIS OF THE EFFECT OF FRIENDSHIP STRUCTURE ON PERFORMANCE

Dependent, Independent, and Control Variables

Three measures of hotel performance are collected by the AHA and reported on a monthly basis: the occupancy rate (total rooms sold divided by total rooms available), the average room rate (average price of the rooms sold during the month), and the hotel yield (average price obtained for each available room). Because hotel managers consciously trade-off the average price they obtain for each room sold against the occupancy rate of the hotel, these are problematic measures of performance. Yield, which is the product of the two, is a much better measure. The yield should improve in the presence of intercompetitor friendships, as the mechanisms described variously promise improvements in occupancy (e.g., the sharing of overflow customers) *and* price (e.g., norms against price cutting) without requiring a trade-off between the two. Further, yield is the performance measure that hotels seek to optimize. Of course, such optimization occurs with some consideration of costs, but cost data were not available to us. We do, however, know the star rating of each hotel, which serves as a proxy for cost. Star ratings are determined by the quality of the physical facility and the level of service, the two most significant contributors to a hotel's cost structure.

A variable that captures the number of friends a manager has among the hotels that are identified as competitors tests hypothesis 1. Our performance models also control for the total number of competitors a manager identified, as well as the number of friends that he or she has at hotels not identified as competitors. The cohesion of a manager's friendship group, which tests hypothesis 2, is operationalized as the percentage of all possible ties among a manager's friends that actually exist. The cohesion of competitors, which tests hypothesis 3, is the percentage of all possible friendship ties among a hotel's competitors that actually exist. These variables are based on managers' own identifications of their friends. In supplementary analysis, we used variables that captured only reciprocated friendships where the manager of hotel i identified a friend at hotel j, and the manager of hotel j identified a friend at hotel i (59% of all friendships and 63% of friendships to competitors were reciprocated). The results of that analysis were comparable in all respects to the results reported below.

Relying on past research on hotel performance, we were able to assemble a concise set of control variables. Because we are interested in modeling performance differences between hotels independent of changes in industry conditions, we control for the industry average price and vacancy rate in each month. This is an efficient alternative to controlling for a host of industry-level variables that are not relevant to our theory. We also include the size of the hotel (measured in total rooms available) and the distance in meters from the southern end of Sydney's Harbour Bridge. Location has a pronounced impact on hotel performance (Ingram and Inman 1996), and it is advantageous to be located close to this focal point for travel into and around Sydney. Ingram and Baum (1997) showed that chain linkages within a city benefit hotels in numerous ways, for example, through economies of scale and the transfer of knowledge, so we include a variable indicating the number of other hotels in Sydney that the hotel is linked to by chain affiliation. Finally, we included measures to reflect Baum and Mezias's (1992) finding that the competitive structure of the Manhattan hotel industry was localized on the dimensions of geography, size, and luxury. We constructed three localized-density measures, using the proximity of the hotels on the dimensions of physical location, size, and star rating. The localized-density measures for each hotel are sums of its proximity to each other hotel (one if there is no distance between the hotels, decreasing to zero if they are maximally distant) on the relevant dimension. Hotels that score higher on these measures are more proximate to others on key competitive dimensions and therefore experience greater competition. Table 1 presents the basic statistics of the variables used in the performance analysis.

Method

We measured the friendship network in May 1998 and used the 12 months of performance data from 1998 in our analysis. We employ a full year of data as this allows us to examine the possibility that the effects of friendship networks vary depending on industry conditions. We test for such effects by interacting our friendship measures with measures that reflect various economic conditions in 1998.

Of course, there is a risk that the friendship network might be substantially different six months before or after our measurement of it. One likely source of change in the friendship network is when managers change jobs. Fortunately, this happened only five times in 1998 (compared to 16 times in the first 10 months of 1999) for the hotels in our analysis. In four of those cases the managerial change happened in the first two or last two months of the year, so our midyear observation represents the friendships that were relevant for most of the year. In the fifth case, the man-

TABLE 1
BASIC STATISTICS FOR THE PERFORMANCE ANALYSIS

	Mean	SD	Min	Max	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Yield	121.9	41.77	46.32	280.3	.35	.07	.06	.18	.00	−.18	.58	.08	.02	−.22	−.34	.22	.22	−.26
2. Friendships to competitors	1.95	1.4	0	5	. . .	.42	.13	.04	.27	.01	.26	.38	−.02	−.18	.09	.59	.01	−.01
3. Friendships to other hotels	6.21	5.52	0	27			−.01	−.18	.40	−.14	−.20	.18	.14	−.01	−.11	.16	.01	.00
4. Cohesion of friendship group	.36	.21	0	1				.01	.16	−.01	.03	.11	.01	.07	−.10	.19	−.01	.01
5. Cohesion of the competitor group	.47	.31	0	1					−.05	−.06	.30	.12	.15	−.13	−.80	.09	.00	.00
6. Chain ties in Sydney	1.19	1.27	0	3						.24	−.26	−.01	−.15	.33	.07	.14	.00	.00
7. Distance from Sydney Harbour Bridge	3,548	3,169	620	12,440							−.27	−.22	−.93	.40	.40	.20	.00	.00
8. Star rating	4.16	.56	3.5	5								.47	.23	−.48	−.37	.37	.01	−.01
9. Size measured in rooms	279.7	179.6	39	645									.24	−.72	−.21	.43	.01	−.01

10. Geography-localized density	31.82	4.75	18.35	34.88		−.35	−.30	−.17	.00	.00
11. Size-localized density	26.5	4	15.23	30.21			.30	−.17	.00	.00
12. Star-localized density	27.87	4.4	16.5	32				.22	.00	.00
13. Number of close competitors identified	3.46	1.42	0	6					.02	.00
14. Average room rate of industry ...	160.5	3.66	154.9	167.4						.00
15. Average vacancy rate of industry ...	25.44	5.42	15.37	34.07						. . .

NOTE.—Yield is in Australian dollars.

agerial change was taking place as we conducted our interviews, and we were able to record friendship networks for both the incoming and outgoing manager. It is also likely that there were some changes in the friendship networks of the managers that were in place for all of 1998, although preliminary analysis indicated that the precision of parameter estimates was not improved by weighting observations by their temporal distance from May 1998. These facts lead us to conclude that, faced with a compelling reason to examine the effects of friendships under changing industry conditions, our measure of the friendship network for 1998 was sufficiently accurate to justify the analysis using monthly data. Moreover, we show below that our main findings hold when the analysis is performed using a single observation per hotel.

The yield variable is continuous, with a mean of $122 (in Australian dollars), so ordinary least squares regression is appropriate. The fact that we have 12 observations from each hotel raises the potential of autocorrelation in the disturbance term. Tests indicated that our models did have first-order autocorrelation. We corrected for this using a two-step generalized least squares (GLS) procedure whereby we estimated the autocorrelation coefficient and then transformed the data using this estimate (Greene 1997, p. 598).

Results

Model 1 in table 2 includes only the control variables. Model 2 adds friendships to competitors. As predicted by hypothesis 1, this variable has a positive and significant impact on a hotel's yield. Model 3 adds the number of friendships to other hotels that are not identified as competitors. Its coefficient is also positive and significant, but an F-test indicates that it is statistically smaller than the coefficient for friendships to competitors. Together, these estimates suggest that friendships to managers at all hotels improve yield, but that improvement is larger for friendships to competing hotels. Model 4 adds the variable capturing cohesion within the friendship network. Our second hypothesis is confirmed: hotels enjoy better performance when their managers' friends have many friendship ties among them. Model 5 adds the cohesion (in terms of friendship ties) of the focal hotel's competitor set, which again has a positive and significant coefficient. As predicted by hypothesis 3, hotels benefit from the cohesion-enabled efforts of their competitors, even when they are not part of the competitors' friendship group.

The final model in table 2 (model 6) adds an interaction between friendships to competitors and the average vacancy rate for the industry. The average vacancy rate captures the important seasonal fluctuations that characterize the Sydney hotel industry and is (at least in the short run)

TABLE 2
GLS Regressions of Hotel Yield

	Model					
	1	2	3	4	5	6
Intercept	−.76	1.18	−.66	−1.80	−4.64	−4.17
	(3.85)	(3.83)	(3.84)	(3.87)	(3.98)	(3.88)
Friendships to competitors	. . .	6.90**	4.83**	4.63**	4.03*	13.80**
		(1.77)	(1.88)	(1.88)	(1.88)	(2.67)
Friendships to other hotels			1.30**	1.46**	1.74**	1.70**
			(.43)	(.44)	(.45)	(.43)
Cohesion of friendship group				19.21*	20.23*	19.83*
				(9.29)	(9.23)	(9.00)
Cohesion of competitor group					19.12**	19.10**
					(6.98)	(6.80)
Friendship to competitors × average vacancy					. . .	−.37**
						(.07)
Chain ties in Sydney	9.52**	7.44**	6.17**	5.78**	5.63**	5.68**
	(1.73)	(1.79)	(1.82)	(1.83)	(1.81)	(1.77)
Distance from Sydney Harbour Bridge	−.01**	−.01**	−.01**	−.01**	−.01**	−.01**
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Star rating	54.52**	52.65**	57.69**	58.59**	57.91**	57.21**
	(4.25)	(4.21)	(4.50)	(4.50)	(4.48)	(4.37)
Size measured in rooms	−.09**	−.10**	−.11**	−.12**	−.11**	−.11**
	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)
Geography-localized density	−7.69**	−7.01**	−7.20**	−7.10**	−8.11**	−8.25**
	(1.01)	(1.01)	(1.00)	(1.00)	(1.06)	(1.03)
Size-localized density	−1.27+	−1.53*	−1.54*	−1.86*	−1.33+	−1.40*
	(.81)	(.84)	(.83)	(.84)	(.86)	(.84)
Star-localized density	.24	.04	.19	.29	.58+	.53+
	(.30)	(.30)	(.31)	(.31)	(.32)	(.31)
Number of close competitors identified	2.51	−.50	−.94	−1.73	−2.21	−2.05
	(1.78)	(1.92)	(1.91)	(1.94)	(1.93)	(1.88)
Average room rate of industry	1.55**	1.51**	1.41**	1.39**	1.46**	1.41**
	(.20)	(.20)	(.20)	(.20)	(.20)	(.20)

TABLE 2 (*Continued*)

	Model					
	1	2	3	4	5	6
Average vacancy rate of industry	−1.40**	−1.41**	−1.44**	−1.45**	−1.42**	−.73**
	(.12)	(.12)	(.12)	(.12)	(.12)	(.18)
R^2	.66	.68	.68	.68	.69	.71

NOTE.—SEs are given in parentheses. Table data are based on 468 observations. Yield is in Australian dollars.

+ $P < .10$.
* $P < .05$.
** $P < .01$.

exogenous to actions taken by the hotels.[6] In preliminary analysis, the vacancy variable was interacted with all of the friendship variables. However, only the interaction with friendships to competitors produced a significant coefficient. That coefficient is negative and indicates that the performance benefits of competitor friendships are greatest when the vacancy rate is lowest (i.e., in periods of relatively high demand). This suggests that a major benefit of friendships to competitors may be from the referral of overflow customers. When vacancies are high, there are fewer full hotels and therefore less opportunity for referrals. However, even in the highest-vacancy months (when the maximum of that variable was 34.07), the negative interaction reported in model 6 never completely offsets the positive main effect of friendships to competitors. So, while the interaction indicates the specific relevance of referrals, the fact that some benefit of friendships to competitors persists under all industry conditions and the effects of the cohesion variables show that the benefits of friendships among competitors are not limited to referrals.

Our test of hypothesis 1 in table 2 relies on managers' perceptions of their hotels' competitors. It is possible to reexamine this hypothesis using the objective information our models provide regarding the structure of competition. As suggested earlier, localized-density measures, which capture a hotel's proximity to others on geography, size, and star rating, describe the competition a hotel faces by virtue of its position in the landscape of relevant hotel attributes. These competitive effects are evidenced by the negative coefficients for geography- and size-localized density in table 2. Hotels that are closer to others in geographic space and in terms of size face more competition and therefore experience lower yields. (Results for star-localized density tend to be insignificant, probably

[6] Recall the advice of the American hotel expert to "stick to the idea that you can't control occupancy" (*Hotel Monthly* 1938).

because the hotels in our sample are all among Sydney's more luxurious.) By decomposing these localized-density measures into two parts—one based on the other hotels where the focal hotel's manager has a friend (the with-friend component) and the other based on the hotels where he or she does not (the no-friend component)—we are able to see if the structural competition generated by hotels with friends is lower. Table 3 presents a set of models that do this. Model 7 is a baseline model. Model 8 breaks the geography-localized density variable into its with-friend and no-friend components. Both coefficients are negative, but the coefficient for the no-friends component is larger in magnitude (the difference is statistically significant). This indicates that nonfriends generate more geography-localized competition, which is consistent with our claim that friendships act to mitigate competition. Model 9 presents the same decomposition for size-localized density, with comparable results. The competitive effect produced by nonfriends is greater than that produced by friends. Thus, the benefit of friendships to competitors is still apparent when competition is represented by the more objective measures of localized density.

Given that we only observe the friendship network at one point in time, it is also worth demonstrating that our results do not depend on the statistical power obtained by using 12 months of performance data. Table 4 shows regressions with a single observation for each hotel. Here performance is represented by the average yield across all 12 months in 1998). Model 10 includes the variables from model 4 (excluding the industry-average control variables, which would be constant across all observations). To conserve degrees of freedom, nonsignificant variables were dropped in model 11. It shows results that are comparable to those from model 4, except that the cohesion of the friendship group is no longer significant. Friendships to competitors still provide performance benefits greater than those attributable to other friendships, and the cohesion of the competitor group still improves hotel performance. Model 12 decomposes geography-localized density into its "with-friend" and "no-friend" components (size-localized density is not significant in the annualized-data regressions). Again, the results are comparable to the regressions on monthly data, with nonfriends generating a greater competitive effect.

An alternative explanation for our findings is that the friendships that we observe are endogenous to the model. Perhaps managers of high-yield hotels are viewed as more attractive and therefore find it easier to form and maintain friendships with their competitors. Cross-sectional data have limitations for getting at issues of causality, but instrumental-variables estimation is one method for adjusting for the possible endogeneity of friendships (Greene 1997). This technique involves creating proxies for endogenous variables by using variables other than the dependent vari-

TABLE 3
GLS Regressions of Hotel Yield with Competition Matrix Decomposed by Friendships

	Model		
	7	8	9
Intercept	−4.48	−4.10	−5.01
	(3.69)	(3.58)	(3.60)
Cohesion of friendship group	14.78^{+}	19.01*	18.79*
	(9.19)	(8.94)	(8.99)
Cohesion of competitor group	14.66*	18.91**	19.35**
	(6.99)	(6.82)	(6.59)
Chain ties in Sydney	9.66**	5.53**	6.07**
	(1.71)	(1.82)	(1.81)
Distance from Sydney Harbour Bridge	−.01**	−.01**	−.01**
	(.00)	(.00)	(.00)
Star rating	54.95	57.89**	58.59**
	(3.96)	(3.87)	(3.90)
Size measured in rooms	−.09**	−.11**	−.12**
	(.02)	(.02)	(.01)
Geography-localized density	−8.48**	. . .	−8.24**
	(1.05)		(1.02)
Size-localized density	−.96	−1.43*	. . .
	(.87)	(.85)	
Star-localized density	.59*	.54^{+}	.62*
	(.29)	(.28)	(.28)
Geography-localized density, friends		−5.94**	. . .
		(1.12)	
Geography-localized density, nonfriends		−8.29**	. . .
		(1.02)	
Size-localized density, friends			−.99
			(.93)
Size-localized density, nonfriends			−1.61*
			(.86)
Average room rate of industry	1.60**	1.49**	1.51**
	(.21)	(.20)	(.20)
Average vacancy rate of industry	−1.38**	−1.41**	−1.41**
	(.12)	(.12)	(.12)
R^2	.67	.69	.69

Note.—SEs are given in parentheses. Table data are based on 468 observations. Yield is in Australian dollars.

$^{+}$ $P < .10$.
* $P < .05$.
** $P < .01$.

TABLE 4
REGRESSIONS OF HOTEL YIELD, ANNUAL AVERAGE

	MODEL		
	10	11	12
Intercept	336.41**	309.51**	306.91**
	(97.87)	(86.06)	(85.59)
Friendships to competitors	5.05+	5.10*	. . .
	(3.59)	(2.99)	
Friendships to other hotels	1.23+	1.08+	. . .
	(.90)	(.79)	
Cohesion of friendship group	8.61	. . .	. . .
	(17.25)		
Cohesion of competitor group	22.28+	21.70*	22.63*
	(13.38)	(11.87)	(11.82)
Chain ties in Sydney	7.05*	5.92*	5.95*
	(3.53)	(3.15)	(3.17)
Distance from Sydney Harbour Bridge	−.02**	−.02**	−.02**
	(.00)	(.00)	(.00)
Star rating	49.72**	48.89**	52.36**
	(9.68)	(7.92)	(7.44)
Size measured in rooms	−.10**	−.07**	−.07**
	(.03)	(.02)	(.02)
Geography-localized density	−10.58**	−10.90**	. . .
	(2.41)	(2.12)	
Size-localized density	−1.77	. . .	. . .
	(1.50)		
Star-localized density	.25	. . .	. . .
	(1.17)		
Geography-localized density, friends			−9.21**
			(2.30)
Geography-localized density, nonfriends			−11.26**
			(2.11)
Number of close competitors identified	−.64	. . .	. . .
	(3.73)		
R^2	.79	.78	.77

NOTE.—SEs are given in parentheses. Table data are based on 40 observations. Yield is in Australian dollars.
+ $P < .10$.
* $P < .05$.
** $P < .01$.

able of the regression. In other words, we needed a model of who was friends with whom that did not rely on the past performance of managers' hotels. The second part of our analysis provided such a model and indicated that perceptions of competition, opportunities for interaction, previous social ties, and friendliness all influence whether the manager of one hotel identifies a manager at another hotel as a friend. We used the predicted values of our best model of friendship structure (model 16 in

table 6) as a proxy for the actual friendship network. We reran our models substituting the proxy friendship variables for the actual friendship variables. The results were substantively the same as those reported in tables 2, 3, and 4, except that the effect of cohesion among the friendship group was only weakly significant in the instrumental-variables regressions. (Table available from the authors). Keeping in mind the limitations of our data, these instrumental-variable regressions support our assertion that friendships influence hotel yield, regardless of any influence that performance may have on the friendship structure.

Thus, our key findings are robust across alternative methodological approaches. The only caveat to this is that the coefficient for cohesion of the friendship group was insignificant in the annualized-data analysis and only weakly significant in the instrumental-variables analysis. Combined with the persistent effect of friendship cohesion among the competitor group, this suggests that the strongest effects of cohesion may be to produce "public goods" that spill over to competitors regardless of whether they are part of the cohesive group.

Turning to the other control variables, we see results that are consistent with our expectations and with past research on hotel performance. Across all models, the star rating of the hotel has a large and positive effect on yield. Hotels also have a higher yield when they are tied to other Sydney hotels through chain affiliation. The location result confirms that it is better to be close to the Sydney Harbour Bridge, while the size result suggests that larger hotels have smaller yields (possibly because they are viewed as less exclusive).

ANALYSIS OF THE STRUCTURE OF FRIENDSHIPS

Dependent, Independent, and Control Variables

The dependent variable in this part of the analysis is a dichotomous variable that captures the existence of a friendship between the focal manager and a manager at another hotel. Each of the managers of the 40 hotels in the sample has the potential for a friendship at 39 other hotels, yielding 1,560 observations. Hypothesis 4 is tested in logit regressions of the likelihood of a friendship between two hotels against a variable that measures the intensity of competition between the hotels, indicated by the focal manager's ranking of competitors (results were comparable when the degree of competition was treated as a dichotomous variable, one if the other hotel was in the competitor set, zero otherwise). No respondent listed more than eight competitors, so we assigned a value of nine to a hotel's most intense competitor, eight to the second most intense competitor, and so on. Noncompetitors were always given a value of zero.

Managers' assessments of competitive intensity were consistent with our definition of competition as arising from reliance on similar resources. For example, five-star hotels in the central business district—which would be expected to chase the same customers, employees, and institutional sanctions—tended to identify each other as close competitors.

Our control variables capture several noninstrumental reasons that friendships between managers may form. We include variables that affect the opportunity to form friendships by providing an increased likelihood that the manager of a hotel will meet individuals from other hotels. It seems likely that managers whose organizations are linked by a shared chain affiliation are more likely to become friends. Managers in the same chain meet regularly to discuss strategic and operational issues, and this contact may stimulate friendship formation. According to our informants, chain affiliations foster even more meetings and closer interaction when the hotels are of the same brand, so our chain variable has three categories: hotel pairs of the same chain but with different brands were coded one, hotels of the same chain and with the same brand were coded two. Hotel pairs with no shared chain affiliation were coded zero.

It is also more likely that two managers will meet, perhaps repeatedly, if the organizations in which they work are close to one another geographically. A variable indicating the distance in meters between hotels should capture this influence (a log transformation of that variable yielded similar results). Previous research has shown that people with friends in common tend to have more opportunity to interact and are therefore more likely to become friends themselves (Burt 1992). At an interorganizational level, Gulati and Gargiulo (1999) argued that being tied to the same others facilitates the formation of a tie by providing information necessary for partner selection. In respect of these arguments, we include a count of the number of common friends that two managers share.

We also suspect that the likelihood of forming friendships will increase with the amount of time available to the manager to form such ties. We control for this factor by including a variable indicating the amount of time (in months) that the focal manager has spent in his or her current role. Opportunities for encounter also should be enhanced if a manager has previous ties to another organization. We therefore include a dummy variable indicating whether the manager from hotel i worked previously in hotel j, and another variable indicating the number of other managerial employees that have moved between hotels i and j in either direction over the previous five years.

We also wanted to capture elements of the potential for attraction between two managers. Similarities on demographic and personality characteristics no doubt have a strong influence on the formation of friendships, but we did not have these data for the top management teams of

the hotels. Another likely attractiveness influence is the prestige of the hotel a manager works for. Managers at prestigious hotels may be perceived as more attractive given their association with more elite clientele and due to their contribution to the production of luxury. Managers may also seek friends at prestigious hotels in the hope that such friendships will generate future job opportunities. Star rating reflects the luxury of a hotel and is a good proxy for prestige among the international hotels. We include a star-rating variable, which is coded one if the target hotel has the same or higher star rating than the focal hotel, and zero otherwise. Table 5 reports basic statistics and correlations for all variables used in the analysis.

Method

The nonindependence of observations is an inherent problem in regressions using network data (Krackhardt 1988). Statistically, this problem can lead to biased estimates of standard errors and therefore compromise tests of the significance of coefficients. In response to this problem, Krackhardt (1988) described the quadratic-assignment procedure (QAP) for regressions using network data. QAP regressions begin with a standard multiple regression (or in our analysis, a logit regression) across the corresponding cells of the dependent and independent matrices. Rather than rely on biased standard errors to determine significance, however, the QAP procedure has a second step where many (in our case, 1,000) additional regressions are estimated by randomly permuting the rows and columns of the dependent matrix. The significance of the coefficient of a variable is determined by comparing its magnitude in the initial regression to the magnitudes of the coefficients for that variable in the "random regressions." If a positive coefficient is of a magnitude that is greater than 95% of the randomly generated coefficients, it is considered to be significant at the 0.05 level. In our analysis of the structure of the friendship network, we use Butts's (1999) QAP version of a logit regression to predict whether the manager of one hotel will claim a friend at another hotel.

RESULTS

Table 6 reports the results of the QAP-logit regressions. Model 13 contains all of the control variables, to which model 14 adds the competitor variable. The coefficient on this variable is positive and significant, indicating that if the manager of the focal hotel perceives the target hotel to be a more intense competitor, then she is more likely to have a friendship at the target hotel. This supports hypothesis 4.

Since both the dependent variable and key independent variable in this

TABLE 5

BASIC STATISTICS FOR THE FRIENDSHIP-STRUCTURE ANALYSIS

	Mean	SD	Min	Max	2	3	4	5	6	7	8	9	10
1. Friendship	.2	.4	.00	1	.27	.25	−.08	.37	.15	.19	.20	.04	.34
2. Competitor	.58	1.95	.00	9.00	. . .	−.02	−.09	.05	.03	.00	.06	−.05	.02
3. Chain related	.05	.29	0	2.00			.01	.14	.00	.11	.16	−.02	.03
4. Physical distance	4,530	3,932	0	21,840				−.09	−.10	−.05	−.02	−.02	−.04
5. Friends in common	2.06	2.75	0	29					.23	.10	.08	−.02	.54
6. Manager tenure	25.4	20.2	1	77						.02	.05	−.14	.38
7. Manager formerly at hotel j	.02	.13	.00	1.00							.18	.01	.07
8. Interhotel mobility	.04	.2	0	2								.02	.00
9. Same or higher star rating	.66	.47	0	1									.02
10. Manager's total friends	7.82	6.06	0	29									. . .

TABLE 6
QAP Logit Regression Results of the Likelihood of Managerial-Friendship Ties between Hotels

	Model			
	13	14	15	16
Intercept	−3.17**	−3.45**	−3.72 **	−4.31**
	(.00)	(.00)	(.00)	(.00)
Competitor	. . .	.28**	.30**	.24**
		(.00)	(.00)	(.00)
Chain related	1.59**	1.68**	1.74**	1.24**
	(.00)	(.00)	(.00)	(.00)
Physical distance	−.00	−.00	−.00	−.00
	(.14)	(.26)	(.26)	(.31)
Friends in common	.35**	.36**	.26**	.09
	(.00)	(.00)	(.00)	(.06)
Manager tenure	.01	.01	.00	.00
	(.09)	(.09)	(.29)	(.36)
Manager formerly at hotel *j*	1.94**	2.11**	2.13**	1.53**
	(.00)	(.00)	(.00)	(.00)
Interhotel mobility	1.35**	1.33**	1.55**	1.29**
	(.00)	(.00)	(.00)	(.00)
Same or higher star rating	.96**	.84**	.74**	1.00**
	(.00)	(.00)	(.00)	(.00)
Manager's total friends	. . .	. . .	.09**	.12**
			(.00)	(.00)
Reciprocity	. . .	. . .	. . .	2.10**
				(.00)
Generalized R^2	.22	.27	.30	.37
Log likelihood	−617.88	−577.34	−557.60	−497.27

NOTE.—*P*-values are given in parentheses. Table data are based on 1,560 observations.
* $P < .05$.
** $P < .01$.

analysis were reported by the managers in interviews, we wanted to rule out the possibility that the association between them was an artifact of the data collection process. In particular, we were concerned that if some managers were more effusive by nature, and therefore identified more competitors as well as more friends, a spurious relationship between the two variables might obtain. Model 15 adds a variable that counts the total number of friends identified, exclusive of the target hotel. This variable is significant (as would be expected if some managers are more friendly than others) but does not alter the sign or significance of the competition variable.

We also wanted to ensure that our results are robust to another likely determinant of friendships, the inherent reciprocity in those relationships. What concerned us was the following scenario: the manager of hotel *i*

identifies hotel j as a close competitor and therefore forms a friendship with the manager of j. The manager of j then forms a friendship with the manager of i, simply in response to the friendship displayed by that manager. If the tendency toward reciprocity in friendships was ignored, our analysis might overestimate the impact of other variables on friendship. Therefore, model 16 includes a reciprocity variable, which is the transpose of the friendship network. So, when estimating whether i will identify j as a friend, j's friendship for i is controlled. As expected, reciprocity is positive and significant. However, all of the other coefficients remain significant and in the same directions. Even after controlling for the tendency for friendships to be reciprocal, managers are more likely to be friends with their close competitors.

Among the control variables, chain affiliation has a positive and significant coefficient across all the models in table 6. When hotels are linked by chain affiliation, it is more likely that there will be friendships between their managers. The coefficients for distance are not significant, indicating that physical proximity does not influence friendship formation. This surprising result may obtain because all of the managers in the analysis were located in one city and were therefore reasonably accessible to one another. The likelihood of a friendship increases with the number of friends in common that managers share but is not affected by the tenure of managers. If a manager previously worked at the target hotel, he or she is more likely to identify a friendship there. Similarly, the greater the flow of other managers between the focal and target hotels, the more likely the manager of the focal hotel will identify a friendship at the target hotel. Managers are more likely to report friendships at hotels with the same or higher star rating as their own, supporting the idea that there is a preference for friends at prestigious hotels.

Dynamic Analysis of the Structure of Friendship

A limitation of the preceding analysis is that it is cross-sectional and thus makes the implicit assumption that the network of friendship ties is in equilibrium. A challenge to this assumption is that it takes time for managers to develop the set of friendships they want and that dynamic forces may actually be pushing the network away from the structure predicted by hypothesis 4. To explore the dynamics of friendships, we collected a second round of friendship data. If our beliefs about friendships and competition are correct, then friendship ties to competitors should demonstrate greater persistence than friendships to noncompetitors. At the same time, we expect the formation of new friendship ties to be more likely at competing hotels, as opposed to noncompeting hotels.

We contacted each of the managers who completed our May, 1998,

TABLE 7
EFFECTS OF COMPETITION ON CHANGES IN FRIENDSHIP TIES

	EXISTING FRIENDSHIPS DROPPED*			NEW FRIENDSHIPS ADDED†		
	Retained	Dropped	Total	Not Added	Added	Total
Noncompetitors ...	85	35	120	499	60	559
	(70.8)	(29.2)	(100)	(89.3)	(10.7)	(100)
Competitors	36	5	41	16	14	30
	(87.8)	(12.2)	(100)	(53.3)	(46.7)	(100)
Total	121	40	161	515	74	589
	(75.2)	(24.8)	(100)	(87.4)	(12.6)	(100)

NOTE.—Percentages are given in parentheses.
* Test for independence of dimensions: 4.714 ($P = .030$) (Pearson χ^2).
† Test for independence of dimensions: 33.466 ($P = .00$) (Pearson χ^2).

survey and asked them to fill out a second survey in October, 1999. Of the 41 managers originally surveyed, 21 were no longer employed at the same hotels. We obtained usable responses from 15 of the remaining 20 hotel managers. Each of these managers indicated whether they still had a friendship tie at each of the hotels indicated in the original survey. Our 15 respondents began with a total of 161 friendships, 40 of which were terminated over the next 18 months. In all cases, the termination of a friendship was linked to the departure of a friend from the other hotel (and not to the dissolution of the friendship itself). We also asked each respondent whether they had formed any new friendships with managers at other hotels during the May 1998–October 1999 period. These managers reported adding 74 out of a possible 589 new friendship ties over this period.

If our view on friendships is valid, then the likelihood of adding or dropping a friendship tie should be related to whether the other hotel is perceived to be a competitor. The results from a cross-tabulation analysis are reported in table 7. Consider first the proportion of friends that were dropped across competing and noncompeting hotels. The left panel of table 7 shows that 29.2% of the friendship ties to noncompetitors were terminated, compared to only 12.2% of ties with competing hotels. A chi-squared test indicates that this difference in proportions is significant ($P < .05$). Looking at new friendship ties (in the right panel of table 7), we see that 10.7% of the possible new friendship ties with noncompetitors were formed, while 46.7% of the possible ties with competitors were formed. This difference is once again significant ($P < .001$). These results add further support in favor of our claim that managers are biased toward competitors when forming and maintaining friendships.

We also used this second round of friendship data to investigate the

argument that good hotel performance results in more friendships, the reverse-causality alternative to our interpretation of the performance results. Neither the likelihood of maintaining an existing friendship, nor forming a new friendship, was related to the previous performance of the focal or target hotels. So, the performance-causes-friendship alternative has no support.

DISCUSSION AND CONCLUSION

We undertook this research because we wondered if the pattern of friendships among managers of competing organizations would influence performance in the Sydney hotel industry and if managers would establish and maintain such friendships in order to benefit their respective hotels. Our results indicate that the performance effects of friendships are substantial. We calculated an average dollar value for a friendship with a competitor by multiplying its estimated effect on the average daily yield in Australian dollars ($4.03 from model 5) by the average number of rooms in a hotel (280), and then by the total number of days in a year (365). Applying an exchange rate (see n. 4, above), each friendship with a competitor contributes approximately $268,000 to the annual revenue of a typical hotel. We also calculated the magnitude of the effect of cohesion among a hotel's competitors. A one standard deviation (0.31) increase in that variable (whose coefficient in model 5 is 19.12) translates into roughly $400,000 of annual revenue. In total, the observed friendship network augmented the annual revenue of the 40 hotels we studied by roughly $70 million.[7] Assuming friendships had the same effect for the 11 hotels not included in our analysis, the total annual benefit to the international segment of the Sydney hotel industry approximates $90 million, or roughly 15% of total revenue.

These striking figures give new concreteness to the concept of social capital by confirming that friendships add substantially to the bottom line of business organizations. This certainly is consistent with the argument that economic behavior is embedded in and conditioned by networks of social relations (Granovetter 1985; Uzzi 1997). And while the embeddedness literature suggests that the intersection between social and economic relations is pervasive, it has seldom tackled relationships that

[7] We arrive at this estimate by multiplying the annual-revenue effect obtained using the model 5 coefficient (e.g., $268,000 for friendships with competitors) for friendships with competitors, friendships with managers at other hotels, and cohesion among the competitor group by the means of those variables. This gives us a "per hotel" friendship effect, which is then multiplied by 40. Note that we took the conservative position of disregarding cohesion among the friendship group because its coefficients were not significant in all models.

are as stark in relief as those addressed here: competition and friendship. The juxtaposition of these relationships is significant, as it makes it harder for those who would limit the intrusion of society into economy by, for example, characterizing embedded relationships between buyers and suppliers as predictable outcomes of a repeated, noncooperative game (Gibbons 1999). Friendships among competitors cannot be trivialized as a moderate extension of the mechanisms for governing a well-recognized form of exchange. Rather, they point to the existence of exchange where, according to the prevailing model of atomistic competitive behavior, none should be. That this should be so in an industry that is mature, professionally managed, and located within the institutional framework of modern Western capitalism suggests that the logic of competition should be revised to incorporate the logic of friendship.

At the same time, our results indicate that interactions in the economic sphere are seeds for relationships in the social sphere. Sydney hotel managers were more likely to identify friends at competing hotels, and those relationships were more robust over time. Of course, this is only a glimpse at the social lives of the managers. Indeed, in light of our findings, we are very interested in knowing more about the competitor friendships and how they fit into managers' broader social networks. Coser et al. (1982) found evidence of a tension surrounding competitor friendships among book editors. We did not dig as deeply into this tension, but a few respondents did make a point of telling us that while they had friends among other hotel managers, these were not their closest friends. The instrumental component of competitor friendships probably limits them as vehicles for sentiment. Still, it would be a mistake to deny that these relationships implied positive affect.

At the end, what we have uncovered is evidence of a nexus of contacts between the social and economic spheres that may have dramatic implications in both directions. Friendship relationships matter in the context of competitive behavior, while economic competition is a stimulus for, and moderator of, friendship relationships in the social sphere. Given this interactive importance, researchers should dispel any stigma associated with recognizing that competitors may be friends and work toward a deeper appreciation of the complex array of causes and effects.

We must, however, emphasize that our results are based on analysis of a horizontal network of ties among competitors and that the findings must be seen in this context. Therefore, our findings in favor of cohesion do not contradict prior demonstrations of the advantages of nonredundant networks. Rather, a horizontal network of competitors operates differently, and therefore calls for a different structure, than does a network that connects customers and suppliers or job-seekers and their informants. A cohesive network structure is better at combining the efforts of similar

actors. That group cohesion facilitates collective action is one of the bedrock principles of social psychology and has been applied to explain prosocial behaviors as diverse as the teamwork of young boys, adherence to restriction of output norms on the shop floor, and the heroism of the American soldier (Sherif et al. 1961; Homans 1950; Stouffer 1949). The principle has also been applied in network analyses. Gould (1991, 1993), for example, demonstrates that the social cohesion of trades contributed to strike activity, while the cohesion of neighborhoods contributed to urban insurgency in 19th-century France. It has been less influential in previous analyses of interorganizational networks, which have tended to examine vertical networks, or those with only indirect economic ties. Besides indicating the relevance of horizontal networks for explaining organizational behavior and performance, our results also point to the necessity of distinguishing between roles (e.g., competitor or supplier) to understand the relationships between network actors.

Another distinction that is made apparent by our results is that between formal and informal ties. At the most basic level, we show that informal ties between organizations matter to managers and that they affect organizational performance. Our results also suggest a link between the formal and the informal, which may lead to a refinement of existing analyses of formal ties. At least one of the significant determinants of friendships between the managers of two organizations—chain affiliation—represents a formal tie between those organizations. This tie creates the opportunity to form a friendship, which enhances organizational performance even after the formal tie is controlled for. This suggests a possible path by which other formal organizational ties lead to interorganizational influence. There is reason to believe that other structurally mandated ties, such as those between members of boards of directors, may also breed friendships and that friendship may contribute to the effects that formal ties have on organizations (Westphal 1999).

Given these findings, it is now important to ask, To what extent do other industries operate in a similar manner? While we cannot provide a definitive answer, we can point to the specific features of our sample that may make these results more or less generalizable. The international segment of the Sydney hotel industry is typical in its numbers and managerial perceptions of competitors (Porac et al. 1995). On the other hand, friendships may be easier to form in this industry because of relatively high employee mobility across organizations, and the location of all competitors within a single city. And social structures that support tacit collusion may be particularly valuable because high fixed costs and the perishable nature of hotel rooms create strong incentives for price-cutting (Tirole 1988). But these features do not seem so idiosyncratic as to call into question that friendships among competitors would also be important

in other industries. It is fairly common for those who hear about these results to describe seemingly similar competitor friendships in some other industry with which they are familiar. And at least one study documents competitor friendships in an industry (publishing) that seems significantly different from the hotel industry (Coser et al. 1982).

In closing, we ask what ought to be done with the knowledge about how friendships between competitors operate in the Sydney hotel industry? For managers seeking to improve the performance of their organizations, our results recommend that they form friendships with competitors and encourage those friends to become friends themselves. (At least one U.S. hotel chain evaluates its managers based on their efforts to build friendly relations with competitors.) This advice comes with the critical caveat that the instrumental benefits of friendships are inextricably tied to the affective elements of those relationships. Individuals who try to form and maintain friendships solely as a means to material gain will fail to evoke trust and reciprocity from those they attach themselves to and will obtain neither sentimental nor instrumental benefits (Granovetter 1995).

The appropriate action for others affected by friendships among Sydney hoteliers is not as clear. The economic benefits of competitor friendships to Sydney's hotel industry cannot be disputed, but networks that produce positive benefits for ingroups are sometimes negative for outgroups (Portes 1998). The most salient outgroup in this case is the group of customers that interacts with Sydney hotels. It is therefore relevant to wonder to what extent these benefits represent a redistribution from customers to hoteliers. The answer hinges on the extent to which the friendship gains are primarily derived from mechanisms that are (usually) seen as harming customers (such as collusion) as opposed to those that are more clearly beneficial to consumers (such as referring customers when hotels are full). Unfortunately, our data do not allow us to parse out these different effects. Deciding if friendships between competitors are good or bad, overall, for society requires estimates of how much of their benefit comes from improving the industry's performance relative to other industries, how much is from the mitigation of competition, and how much is from creating better products and services. Given the importance of these questions, this shortcoming presents a very challenging but very useful goal for future research.

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