

Organizations Non Gratae? The Impact of Unethical Corporate Acts on Interorganizational Networks

Bilian Ni Sullivan

Department of Management of Organizations, Hong Kong University of Science and Technology,
 Clear Water Bay, Kowloon, Hong Kong, mnbilian@ust.hk

Pamela Haunschild

McCombs School of Business, University of Texas at Austin, Austin, Texas 78712,
 pamela.haunschild@mccombs.utexas.edu

Karen Page

College of Business, University of Wyoming, Laramie, Wyoming 82071, kpage@uwyo.edu

In this study, we examine the effects of illegal/unethical acts on interfirm networks. We hypothesize that the quality of network partners will decline and overall network structure will change after a firm commits an unethical act. More specifically, we posit that the decline in partner quality is primarily driven by higher quality firms leaving the network, and the focal firm being forced to replace them with lower quality ones. We also propose that partner prominence and network cohesion will be affected after these acts, and that the changes in partner quality and network structure will be greater for those acts perceived as more illegitimate. We test these hypotheses using a sample of 200 large firms in the United States and data on unethical acts by these firms. Our results show that the quality of a firm's network partners declines after the firm's commission of an unethical act, and that the deterioration in partner quality tends to be greater for acts of greater illegitimacy. Our results also show declines in network prominence and cohesion for firms involved in these activities. We discuss the implications of our results for the literatures on interfirm networks and unethical corporate activities.

Key words: legitimacy; networks; unethical acts

Recent corporate scandals over various forms of crime and malfeasance have drawn much public attention and have resulted in several notable bankruptcies. For example, Enron, once the largest buyer and seller of natural gas and electricity in the United States, filed bankruptcy in December 2001 in the wake of revelations of fraud. WorldCom, a Mississippi start-up, became the nation's second largest long-distance phone company before it collapsed in 2002 amid an \$11 billion accounting scandal. Both Enron and WorldCom, once two of America's "Most Admired Companies," according to *Fortune's* rankings, were two of the "Least Admired Companies" by 2003 (*Business Wire* 2000, Egbert 2002, Wall 2003). These highly public examples prompted us to query whether, in addition to the loss of consumer and investor confidence, the commission of unethical acts has other, less public consequences for firms. Specifically, we are interested in investigating how a firm's ties to other firms might be affected as a result of such acts.

In this study, we contend that unethical acts result in changes in both the quality of a firm's network partners as well as overall network structure by decreasing the firm's legitimacy. Legitimacy is an important factor governing interfirm networks (Galaskiewicz 1985, Human and Provan 2000), and firms derive important benefits from being linked to legitimate others (Baum and Oliver

1992, Podolny and Phillips 1996, Stuart et al. 1999). Therefore it is possible that firms that engage in unethical acts suffer damage to the quality and structure of their networks, in essence becoming organizations non gratae as other firms avoid partnering with them.

The effect of unethical acts on interfirm networks is important for several reasons. First, network structure and content have been shown to have important consequences for firms, including survival and performance (Miner et al. 1990, Uzzi 1996), growth (Podolny et al. 1996), the likelihood of being taken over by another firm (Palmer et al. 1995), the time a division takes to get a product to market (Hansen 1999), the acquisition of competitive capabilities (McEvily and Zaheer 1999), and acquisition profitability (Beckman and Haunschild 2002). Moreover, quality network partners benefit firms by acting as a signal of firm quality to potential investors (Stuart et al. 1999). Thus, any negative impact of unethical activities on the structure of a firm's networks or the quality of its network partners may impair firm survival, growth, and other important outcomes.

Second, in understanding the effects of unethical activities on firm networks, we add to our understanding of network change. While there has been significant work on the factors affecting the formation of interfirm networks (e.g., Pfeffer and Salancik 1978, Burt 1983,

Williamson 1991), there has been much less on the evolution or destruction of networks (Gulati and Gargiulo 1999, Beckman et al. 2004). The breaking of network ties has received little attention, in part, because of the assumption that dissolution is the simple inverse of formation (Broschak 2004). Yet, as Broschak (2004) shows, the dissolution process is more complicated than this. As unethical acts may function as a catalyst for destruction of network relationships, subsequent evolution of networks may also move in more complex directions than our current theories would predict. Thus, studying the effects of unethical activities on firm networks should extend our understanding of both network dissolution and evolution.

Finally, while many scholars have investigated the causes of unethical acts (e.g., Staw and Sz wajkowski 1975, Shapiro 1980, Baucus and Near 1991, Trevino and Brown 2004) and the financial consequences of such acts (e.g., Reichert et al. 1996, Baucus and Baucus 1997, Orlitzky et al. 2003), work in this area has generally not considered the network consequences of such acts.

Theory and Hypotheses

We define unethical acts as acts that are illegal under state or federal laws or acts that are “morally unacceptable to the larger community” (Jones 1991, p. 367). These may range from the clearly illegal acts of violating environmental laws or obstruction of justice to legal, but generally disfavored acts, such as paying greenmail to a corporate raider. There are many different perspectives on what drives unethical behavior, including individual-level perspectives (e.g., Ford and Richardson 1994); organization-level perspectives (e.g., Trevino and Brown 2004), and environmental perspectives (e.g., Staw and Sz wajkowski 1975, Shapiro 1980, Jacquemin et al. 1981, Baucus and Near 1991). There is also a large body of work demonstrating the generally negative financial consequences of unethical acts (e.g., Reichert et al. 1996, Baucas and Baucas 1997, Orlitzky et al. 2003). Although, as noted above, some scholars have examined the relationship between networks and unethical acts, this work has focused on networks as a cause, rather than a consequence of such acts (Baker and Faulkner 1993, Brass et al. 1998, Granovetter 1985). In this study, we extend this work by examining the network changes associated with firms that engage in these acts.

Consequences of Unethical Acts: Organizations Non Gratae?

One key factor leading to network changes after the commission of an unethical act is likely to be the negative impact of such acts on firm legitimacy, leading to concerns regarding the effects of continued association with that firm on the part of their network partners. In a broad sense, legitimacy refers to the extent to which individuals, groups, or organizations exist or act in accordance

with socially accepted standards of behavior (Suchman 1995). Firms generally seek to affiliate with legitimate others (Meyer and Rowan 1977, Hannan and Freeman 1977, Pfeffer and Salancik 1978, Suchman 1995) because their own legitimacy is enhanced through the association (Galaskiewicz 1985). This is because legitimacy improves and stabilizes resource flows (Pfeffer and Salancik 1978, DiMaggio and Powell 1983, Wiewel and Hunter 1985, Aldrich and Auster 1986, Miner et al. 1990, Scott 2001), or because highly legitimate partners provide success and survival benefits (Baum and Oliver 1992, Stuart et al. 1999, Podolny and Phillips 1996).

While these studies show the benefits of ties to legitimate others, they have focused on the positive side of such organizational connections, i.e., the benefits of connecting to high-legitimacy others. A reasonable extension of this work is that organizations with low legitimacy offer little, or even negative value to their partners. This means that declining legitimacy could act as an impetus for the dissolution of relationships, where more legitimate firms sever relationships with their less legitimate partners. This idea is supported by Elsbach (1994) and Elsbach and Sutton (1992), who suggest that controversial actions will drive away organizational members and jeopardize endorsement and support from outsiders. Unethical acts are likely to be one type of legitimacy-reducing action, driving at least some partners away.

The concept of legitimacy is often used synonymously with status or reputation (Washington and Zajac 2004), and these various concepts are difficult to disentangle (Sine et al. 2003, Washington and Zajac 2004). Legitimacy, however, generally describes perceptions of whether an organization is acting appropriately within societal norms (Suchman 1995, Scott 2001). Organizational status is generally concerned with perceptions of an organization’s relative standing to others (Sine et al. 2003) and has been defined relative to network partners (e.g., Podolny and Phillips 1996). Reputation is often discussed in terms of the perceptions of an organization’s past and future actions in the eyes of a particular audience (Roberts and Dowling 2002, Fombrun 1996).¹ The literature of legitimacy, reputation and status, however, has also argued that legitimacy is the foundation for the emergence of reputation and status (Rao 1994, Stewart 2005, Zhou 2005). The focus of our arguments, therefore, will be on the legitimacy construct (as affected by various illegal or unethical actions), while also drawing insights from the literatures on status and reputation as they apply in our context.

Changes in Network Partner Quality

If organizations are concerned with the declining legitimacy of their network partners as a result of unethical activity, we should see dissolution of relationships, with some partners choosing to no longer affiliate with these firms. At the same time, the departure of network partners is likely to prompt attempts by focal firms to

reconstitute these ties (Palmer 1983). Thus, illegitimate acts are likely to set in motion a set of actions that result in changes in the networks of the firms committing the acts. But what specific changes will occur? Research on the dynamics of status hierarchies (Podolny 1994) can provide some insights into this question. Research on the dynamics of status hierarchies (Podolny 1994) argues that because high-status actors generally avoid affiliating with low-status actors, as doing so risks losses to their own status levels (Podolny 1994, Benjamin and Podolny 1999), low-status actors are constrained in their ability to form relationships with others of higher status. Thus all firms are generally restricted to affiliating with others of similar status.

This work can be extended to the context of legitimacy in the following way. As noted earlier, since legitimate, high-quality partners bring benefits, firms are generally motivated to include such partners in their networks. After the commission of an unethical act, however, the legitimacy of a firm is likely to suffer, making it less attractive as a partner, and relationships with this firm are likely severed as a result. The dynamics of quality and legitimacy then occur, meaning that the focal firms (i.e., those committing the unethical acts) will, because of their diminished legitimacy, be forced to replace lost partners with those of lower quality. Thus we hypothesize that there will be a decline in the quality of a firm's network partners after the commission of an unethical act, and that this decline will be because of higher quality partners leaving the network, and lower quality firms taking their place.

In this study, we have identified three characteristics of network participants that seem to be key dimensions of quality: firm reputation, profitability, and size. These are dimensions on which the dynamics of partnering tend to play out in other contexts. Having good reputation partners, for example, has been shown to provide a number of benefits to firms (e.g., Benjamin and Podolny 1999, Stuart et al. 1999), including the ability to attract quality partners (Fombrun and Shanley 1990, Fombrun 1996). In addition, partner size and profitability have also been found to be associated with legitimacy and good reputation (Fombrun and Shanley 1990). Moreover, firms generally look to large and successful (e.g., profitable) organizations as imitation targets (DiMaggio and Powell 1983). It is, therefore, likely that having partners of good reputation, large size, and good profitability will indicate that a firm has a *quality* network.

We thus hypothesize that large, successful, good reputation firms will sever relationships with firms whose legitimacy is declining as a result of an unethical act. We further hypothesize that focal firms will be forced to replace these high-quality partners with smaller, less successful, poorer reputation firms.

HYPOTHESIS 1 (H1). *Firms that engage in unethical acts will experience a decline in the quality of their network partners.*

HYPOTHESIS 2 (H2). *The decline in network partner quality of firms engaging in unethical acts is driven by the exit of higher quality partners and their replacement with lower quality partners.*

Changes in Network Position and Structure

The arguments we presented above about how unethical acts affect the quality of a firm's network partners suggest that, if we look at firm networks as a whole, they might look different after the commission of such acts than they did before the act. This is because a change in partner quality can directly affect the characteristics of the larger network. For example, when a focal firm loses a high-quality firm, it is also likely to be losing a well-connected firm. Thus we argue that the commission of an unethical act will affect two dimensions of a firm's network: positional prominence and network cohesion.

First, the commission of an unethical act is likely to affect a firm's positional prominence (Wasserman and Faust 1994). A firm is prominent if its network partners are well connected in their own networks. As Nohria (1992, p. 6) explains, "An actor's prominence increases as the actor is the object of relations from many others who are in turn the object of many relations." A firm's prominence will be negatively affected by unethical acts because the firm is likely to lose central partners in its network because of the *organization non gratis* effect we identified earlier. Partners who are more central are more likely to withdraw from a network than those who are less central, because central firms generally feel more pressure to conform to prevailing norms (Davis 1991), and thus are likely to be more concerned about being connected to a firm with declining legitimacy. In other words, after the commission of an unethical act, a firm will be in less demand as a network partner, especially by firms that are well connected themselves. As a result, the firm's positional prominence in its network will decline.

HYPOTHESIS 3 (H3). *Firms that commit unethical acts will experience a decline in positional prominence.*

We also argue that structural cohesion is likely to be affected by a firm's unethical acts. Structural cohesion reflects the connectivity among a focal firm and its network partners (Friedkin 1998, Burt 1992) and is "the extent to which a relationship is surrounded by strong third-party connections" (Reagans and McEvily 2003, p. 245). Cohesion provides reliability of information and enforcement of norms by network partners (Reagans and McEvily 2003). To have cohesive relationships with partners and reap the benefits of cohesion, it is important for the focal firm to have partners with strong third-party connections. The reshuffling in networks driven by legitimacy concerns, however, suggests that a firm is less likely to have partners with strong third-party connections after it has committed an unethical act because of

the enforcement of norms in these networks. Legitimacy concerns in this case can polarize or create holes in relationships among partners. When partners sever ties with a firm that has committed an unethical act, the focal firm loses connections associated with those particular partners. When the firm replaces those ties, the replacements are likely less connected to other firms in the existing network. This can occur for two reasons. First, legitimacy concerns are a form of information likely to be communicated among partners and potential partners, much as any information flows among network connections (e.g., Davis 1991). Thus, if well-connected firms drop out of the focal firm's network, their partners are unlikely to join because they are more likely to have access to the information about the (il)legitimacy of the firm that committed the act. Second, because of the difficulties mentioned above with replacing close social proximity ties where knowledge of an unethical act is present, the search for new network partners by the focal firm will be to more distant, less connected firms, thereby reducing the focal firm's network cohesion.

HYPOTHESIS 4 (H4). *Firms that commit unethical acts will experience a decline in network cohesion.*

Degree of Illegitimacy

If, as argued earlier, unethical acts result in changes in network partner quality, then these changes are likely to vary with the degree of illegitimacy of the acts in question. That is, partner legitimacy concerns and distancing effects are likely to be stronger for acts that are seen as more serious violations of societal norms. This means that the quality of replacement partners will likely be lower after the commission of more illegitimate acts. We would also expect to see a greater decline in cohesion and prominence for more illegitimate acts as more central partners weigh the cost of a continued tie to a firm that has committed such an act. We thus hypothesize that the effects of H1 (decline in partner quality), H3 (decline in partner prominence), and H4 (decline in network cohesion) after the commission of an unethical act will be stronger for acts perceived to be more illegitimate.

HYPOTHESIS 5 (H5). *Firms that commit acts of greater illegitimacy will experience a greater decline in the quality of their network partners than firms that commit acts of lesser illegitimacy.*

HYPOTHESIS 6 (H6). *Firms that commit acts of greater illegitimacy will experience a greater decline in prominence and cohesion than firms that commit acts of lesser illegitimacy.*

Method

Sample

Our panel data consist of 200 large-sized (in terms of sales) U.S. manufacturing and service firms existing during the 1990–1993 period. We constructed this sample

by randomly selecting publicly held firms from *Fortune's* list of the 300 largest service and manufacturing firms during the 1980–1990 period and collecting data on each for the 1990–1993 period. We restricted our sample to publicly held firms because network and control variable data are not generally available for private firms. A total of 258 unethical acts were recorded for our sample, with 101 of the 200 firms engaging in one or more of these acts.

We focused our empirical analysis on one type of network—director interlocks—where members of one firm sit on the board of directors of another firm. We chose to study director interlocks for three reasons. First, interlocks have been found to be influential in many important firm activities (e.g., Westphal 1998, Beckman and Haunschild 2002). Second, board members are likely to be sensitive to legitimacy concerns arising from unethical acts because the association of a director with a company is very public and visible to various firm constituencies. Third, board interlocks have also been found to be fairly stable over time (Useem 1984, Davis et al. 2003); therefore, this setting is a fairly conservative one for examining network change.

Dependent Variables

To construct our dependent variables—network partner quality and network structure—we obtained 1990–1993 interlock data from the proxy statements of our sampled firms. We collected data on both sent and received interlocks. Sent interlocks occur when managers of the focal firm sit on boards of other firms. Received interlocks occur when individuals associated with other firms sit on the focal firm's board. Because the significance of the hypothesized results was the same for sent and received ties in almost all analyses, we report results for sent and received combined (i.e., all direct ties), and note exceptions for those cases where results differed.

Network Partner Quality. As noted earlier, we used multiple measures designed to capture the quality of the firms in the network: partner reputation, partner size, and partner profitability. To measure partner reputation, we used the partner's *Fortune* reputation rankings in a given year. *Fortune* has an annual listing of the “Most Admired Companies,” which ranks companies within industries according to various attributes, including quality of management, innovativeness, and long-term investment value. *Fortune* rankings have been used by other researchers as an indicator of firm status or of reputation (e.g., Fombrun and Shanley 1990, Staw and Epstein 2000). Though some researchers have pointed out limitations in the use of the *Fortune* ranking as a reputation measure (Fombrun et al. 2000), the rankings do capture evaluations from several different firm constituencies and incorporate a broad spectrum of evaluative criteria that are related to our ideas of legitimacy.

Further, because the reputation ranking is only one of several measures of network partner quality, limitations are less of a problem than if it were our only measure. Because the *Fortune* list includes different numbers of companies each year and sometimes modifies its evaluation scales, we used yearly standardized rankings in our analyses.

We used sales obtained from COMPUSTAT as our measure of network partner size. The size variable was highly skewed, so we normalized it by log transformation prior to entering it into the analyses. For partner profitability, we used return on assets (ROA) in a given year. Because size and profitability vary substantially by industry, we normalized these variables across industries by subtracting out the average size and profitability of all firms in the same two-digit SIC industry code before entering the variable into the analysis. The average values of the network partners' reputation, size, and profitability were then used as the dependent variables in this analysis.

To test H3 (decline in network partner quality is driven by replacements of higher quality partners with lower quality partners), we constructed a dichotomous dependent variable to indicate if a firm has a lower average reputation, sales, ROA, and network prominence for any new ties relative to ties that were lost. If a firm had a lower average quality of added ties, we coded it as "1"; otherwise, we coded it as "0."

Network Prominence and Cohesion. To compute positional prominence and network cohesion, we constructed an adjacency matrix representing the interlocks among all *Fortune* 300 firms. We then coded the matrix with a "1," indicating two firms were tied through an interlock, and a "0," indicating that they were not. We used the *Fortune* 300 (instead of our randomly sampled 200) to better capture the nature of the network connections among these relatively prestigious firms. Among the various prominence measures, the one that best reflects our theoretical arguments is Bonacich eigenvector centrality (Bonacich 1972, Wasserman and Faust 1994), which weights focal firm centrality by the centrality of its interlock partners and gives a firm a higher prominence score if its connected ties are more central players in the network. We used UCINET v.6.118 (Borgatti et al. 2002) to calculate this variable.

Following Reagans and McEvily (2003), we define structural cohesion as the presence of a strong third party for a potential relationship. In this study, we used the "indirect structural constraint" outlined by Burt (1992) and Reagans and McEvily (2003) to capture the degree of structural cohesion for the focal firm.² We calculated the indirect structural constraint as follows:

$$c_{ij} = \sum_{q=1}^N P_{iq} P_{qj} \quad q \neq j,$$

where the term $P_{iq} P_{qj}$ indicates the proportional strength of i 's indirect connection with j through the third-party actor q (Reagans and McEvily 2003).

Independent Variables

We constructed two primary independent variables of interest: the number of acts and the degree of legitimacy of the acts committed by our sampled firms. We first created a variable indicating the total number of unethical acts committed by the focal firm in the preceding three years. The preceding three years were used because the time for director changes to take effect can be as short as one year or as long as three years (Haunschild 1993).

Consistent with research using the business press as a source of data on unethical acts (e.g., Reichert et al. 1996), we coded acts by searching articles published in the *Wall Street Journal*, *Business Week*, *Fortune*, *Forbes*, and the *New York Times* for the 1987–1993 period.³ These sources were used because they cover major firm unethical activities and also attract a large audience in the business community, including officers and directors of firms most likely to be included in the networks of our sampled firms. In addition, the press affects perceptions of legitimacy of firms (Deephouse 2000, Pollock and Rindova 2003), making press coverage an appropriate source of data in our context. If no unethical acts for a given firm were found in these sources, we then conducted an extended search using the entire Lexis Nexis database of nonlegal sources. In no cases did we find any unethical acts in the Lexis Nexis database that were not reported in our five primary sources, thus increasing our confidence in the completeness of these sources.

Although the press is a generally reliable source of information on these acts, especially when they involve companies of the size included in our sample, we must consider the possibility that the reporting of unethical acts might be less accurate or complete than the reporting of illegal acts. We therefore conducted analyses on illegal acts alone and found that the results were substantively the same, so we combined illegal and unethical in the reported analyses. Because the number of acts was highly skewed, we did a log transformation of this variable prior to entering it into the analysis.

For our second key independent variable, we constructed a measure designed to capture the perceived illegitimacy of the unethical acts in our sample. To accomplish this, we used the unethical acts obtained from the press accounts as described above to develop a set of 24 categories of acts, with a short description of each. Examples of these categories include obstruction of justice, sexual orientation discrimination, and work safety violations. We pretested the descriptions on a sample of five individuals knowledgeable about business ethics to ensure clarity and accuracy. Because some acts were not clearly different from each other, we reduced the number of categories to 18 (see Table 1 for a listing of these categories).

Table 1 Illegitimacy Rating ($N = 34$)^a

Unethical act	Mean
1. Unintentional environmental violations	2.74
2. Bribery in foreign countries	2.95
3. Violation of government regulations	3.15
4. Tax evasion	3.29
5. Unintentional misconduct	3.33
6. Sexual orientation discrimination	3.41
7. Antitrust	3.55
8. Inside trading	3.57
9. Age discrimination	3.70
10. Wrongful discharge	3.78
11. Sexual harassment	3.79
12. Workers' safety violations	3.81
13. Bribery in the United States	3.81
14. Gender discrimination	3.84
15. Obstruction of justice	3.91
16. Racial discrimination	3.94
17. Intentional misconduct	4.17
18. Intentional environmental violations	4.33

^aScaled from 1 (least undesirable) to 5 (most undesirable).

To obtain data on the perceived illegitimacy of each of these acts, we asked 34 individuals to complete a survey asking them to indicate the degree of illegitimacy (i.e., how appropriate is it for a firm to be engaging in this type of act) on a five-point scale. A summary of the mean ratings can be found in Table 1. Our respondents included a mixture of individuals from the general public, though we also included several financial analysts, senior-level business people, and board members of for-profit companies. We used a variety of respondents because we were interested in capturing the opinions of the general public about the legitimacy of these various acts, as we thought it likely that directors would respond to general opinion when concerns about legitimacy were raised in the media. However, we also did a subanalysis of the more *expert* part of our respondent sample (those with for-profit board experience, or financial analysts/bankers ($n = 10$)) to see if there were any differences in this subsample, and there were not ($F(17, 16) = 0.96, p > 0.10$). We use the average illegitimacy ratings for all unethical acts in the preceding three years in all analyses to capture the effects of degree of illegitimacy independent of the number of acts. This variable is used as a continuous variable in our analysis.^{4,5}

Control Variables

We included several control variables that might conceivably relate to our dependent variables—quality of network partners and network structure. In the context of firms committing unethical acts, it is possible that not only will these firms experience declining legitimacy, but they may also experience declines in access to other types of resources. In turn, it is possible that network partners may leave after the commission of unethical acts not only because of legitimacy concerns,

but also because of concerns about potential resource diminishment. Acknowledging Stuart et al. (1999), who found that resource access effects work in tandem with other network effects, we do not disregard this plausible resource explanation. Rather, we attempt to show the effects of legitimacy concerns while controlling for resource diminishment. Thus we included the focal firm's debt-equity ratio, size, and profitability as controls for the resource explanation. In addition, we include focal firm profitability, board size, industry, reputation, number of bank ties, and calendar time as additional controls. Controlling for firm size and profitability at the beginning of the measured period (i.e., two years prior to the unethical act) also address the possibility that the firm's size and profitability might have affected the characteristics of the firm's interlock partners (e.g., Mizruchi and Stearns 1988, Boeker and Goodstein 1991). We used prior year sales (logged) as our size measure and ROA as the profitability measure. We controlled for board size as we wanted to be sure that changes in the quality of the network partners and network structure are independent of the original size of the board. We controlled for firm industry in the form of dummy variables in case network changes are related to industry-level factors. We included broad industry classifications of manufacturing, transportation, communication, service, wholesale trade, finance, and others (as the reference category). Other analyses with more detailed industry classifications (e.g., two-digit SIC codes) showed no change in the effects of the hypothesized variables.

We controlled for the focal firm's reputation because it may also affect changes in network structure and partner quality. We measured focal firm reputation using the *Fortune* rankings for our sampled firms. We controlled for the number of bank ties to the focal firm because prior studies show that banks tend to join a firm's board when that firm experiences a crisis (Richardson 1987, Mizruchi and Stearns 1988, Lang and Lockhardt 1990). We also controlled for the number of firm unethical acts in the models that included the level of illegitimacy of acts, so that we could measure the independent effects of illegitimacy. Finally, we included calendar time to control for any other systematic environmental or macrolevel factors that might vary with time and be related to partner changes.

Finally, in our analyses of partner quality, we controlled for prior partner reputation, size, and profitability. In our analyses of prominence and cohesion, we controlled for prior prominence and cohesion. These controls effectively capture any firm-level explanation (besides those we hypothesize) for changes to a firm's network partner quality, prominence, or network cohesion.

Model

We utilized two different types of analyses. For the analyses comparing network changes, we used the method

of generalized estimating equations (GEE) developed by Liang and Zeger (1986):

$$g(E(y_{it})) = X_{it}\beta \quad y \sim F \text{ with parameters } \theta_{it}$$

for $i = 1, \dots, m$ and $t = 1, \dots, n_i$, where there are n_i observations for each group i .

With the GEE models, we can obtain robust estimators to analyze both between-firm and within-firm variation. Because the GEE models do not focus on the (co)variance structure, GEE estimators yield consistent and asymptotically normal solutions even with misspecification of the (co)variance structure of the panel data. In these GEE models, we acquired generalized regression models by using the Gaussian distribution and the identity link to test Hypotheses 1, 3, and 4; we chose the binomial distribution and the logit link for the model testing H2. We obtained robust standard errors by using the Huber-White “sandwich” estimator (Huber 1967, White 1982).

For analyses using the legitimacy scale, we incorporated Heckman’s procedure for addressing sample selection bias to estimate the panel models. We did this because only firms that engaged in unethical acts during the study period were included in these analyses, as only they had legitimacy scores for their acts. Using Heckman’s selection model, we obtained the “inverse Mills ratio” or “nonselection hazard” (λ) from a random-effects probit model predicting the probability of firm involvement in unethical acts during the sample period, an approach suggested by Nijman and Verbeek (1992) and Kyradzidou (1997). We ran this model on the full sample using the following predicted probability model:

$$\text{Illegal act}_{90-93} = a + b_1\text{Size} + b_2\text{Profits} + b_3\text{Industry}^6$$

We then used the inverse of the Mills ratio as a new variable in the subsequent GEE modeling for the subsample.

Results

Table 2 presents descriptive statistics and correlations for key study variables. Table 2 shows that the correlations for the variables used in the same model do not appear to be particularly high, so the risk of multicollinearity among any of the independent variables is low. We also, however, ran collinearity diagnostics and also used model fit statistics to assess potential collinearity. These procedures showed no deleterious effects of collinearity in the analyses.

Table 3 presents the results of Models 1–3, which test H1. In H1, we hypothesized that unethical acts lead to a decline in the quality of network partners in terms of reputation, profitability, and size. Overall, our results show that the quality of a firm’s partners does indeed

decline as a result of the firm’s commission of an unethical act. To test H1, we ran three separate sets of analyses on each of our three quality variables: partner reputation, partner profitability, and partner size. In Model 1 of Table 3, we included the reputation of the firm’s network partners as the dependent variable. Model 1 shows a negative and significant impact of a firm’s unethical acts on the reputation of their direct (both sent and received) interlock ties. Separate analyses on sent and received ties show similar results (results available from the authors). This means the officers of firms committing an unethical act are sitting on boards of other firms with lower reputations after the act than they were before. Also, the officers of other firms sitting on the focal firm’s board are affiliated with lower reputation firms after the act than they were before. The results indicate that for each unethical act committed, the average reputation of the firm’s partners declines by 0.113 standard deviation. In other words, in a given year, if there are 300 firms ranked from 1 to 300 based on *Fortune* scores (s.d. = 86.75), a firm with an unethical act in the prior three years will drop about 10 ranking positions in average level of partner reputation, which is about 3%. Of course, multiple acts will cause an ever larger decline.

In Model 2 of Table 3, we included the profitability of the firm’s network partners as the dependent variable. As shown in Model 2, the number of unethical acts is related to a decline in the average profitability of the network partners. Again, we found similar results for both sent and received ties in these analyses (results available from the authors). This indicates that unethical acts result in outside directors being affiliated with less profitable firms and in the officers of focal firms sitting on boards of less profitable firms after an unethical act, relative to before the act.

In Model 3 of Table 3, we included the size of the firm’s network partners as the dependent variable. As can be seen from the table, a firm’s unethical acts resulted in a significant decline in the average size of its network partners when we combine sent and received (direct) ties. Additional analyses show that a firm’s unethical acts resulted in a significant decline in the average size of its received ties ($p < 0.05$), and a negative but nonsignificant effect for sent ties. So unethical acts result in outside directors being affiliated with smaller firms after the act, relative to before.

To summarize thus far, we find strong support for H1: firms committing unethical acts experience a decline in network partner quality subsequent to that act. The reputation, the profitability, and the size of the firm’s network partners all decline subsequent to the commission of an unethical act. Table 4 presents the results for Models 6–8, in which we test H2, which states that the decline in network partner quality is driven by lower quality firms replacing higher quality firms. The dependent variable in these analyses is a measure of whether a firm’s new

Table 2 Descriptive Statistics and Correlations Among Key Study Variables^a

Variable	Mean	S.D.	Min.	Max.	1	2	3	4	5	6	7	8	9	10	11	12	13	
1. Direct tie reputation	-0.01	0.62	-1.51	1.42	1													
2. Direct tie profitability (ROA)	-0.79	2.85	-23.06	14.9	-0.02	1												
3. Direct tie sales (ln)	8.6	0.75	2.71	11.17	0	-0.01	1											
4. Network cohesion	0.02	0.02	0	0.17	0.1	0.06	-0.17	1										
5. Network prominence	1.42	5.45	0	77.91	0.04	-0.12	0.18	-0.03	1									
6. Firm profitability (ROA)	3.63	5.9	-70.88	25.95	-0.04	0	-0.01	-0.02	0.03	1								
7. (Log) firm sales	9.01	0.93	3.45	11.82	-0.05	-0.03	0.17	-0.12	0.13	0.02	1							
8. Firm reputation (standardized)	-0.05	0.98	-1.04	2.04	-0.1	-0.05	0.1	-0.12	0.11	0.27	0.24	1						
9. Direct bank ties	0.83	1.04	0	5	0.02	-0.13	-0.16	-0.08	0.14	0.08	0.1	0.18	1					
10. Debt-equity ratio	3.56	9.48	-203.5	53.11	-0.01	0	0.04	-0.02	0.02	-0.08	0.12	-0.02	0.01	1				
11. Board size	13.19	3.17	3	27	0.01	-0.01	0.06	-0.1	0.13	-0.01	0.3	0.03	0.16	0.14	1			
12. Calendar time	2.49	1.12	1	4	-0.06	0.25	0.01	0.06	-0.23	-0.04	0.02	0.01	-0.09	0	-0.04	1		
13. Number of unethical act in prior three years (ln)	0.37	0.55	0	2.64	-0.14	-0.19	-0.04	-0.11	-0.01	0	0.34	0.19	0.14	0.05	0.15	0.07	1	
14. Act illegitimacy ^b	3.63	0.32	2.74	4.33	-0.18	-0.26	0.01	-0.15	0.06	0.03	-0.02	0.05	0.1	0.01	0.011	0.09	0.06	1

^aNumber of firm years = 800, ^bNumber of firm years = 164 (year = 1992 and 1993).

Table 3 Effect of Unethical Acts on Quality of Partners, Positional Prominence, and Network Cohesion GEE Estimates of Generalized Regression Models

Variable	Partner reputation 1	Partner profitability 2	Partner size 3	Positional prominence 4	Network cohesion 5
Number of unethical acts (prior three years)	-0.112* (0.043)	-0.996** (0.222)	-0.125** (0.043)	-0.706# (0.388)	-0.002* (0.001)
Firm profitability	-0.002 (0.003)	0.013 (0.018)	0.003 (0.003)	-0.024 (0.023)	0.000 (0.000)
(Log) firm sales	-0.003 (0.022)	0.028 (0.118)	0.143** (0.033)	0.784** (0.293)	-0.001# (0.001)
Prior partner reputation ($t - 1$)	0.156** (0.015)				
Prior partner profitability ($t - 1$)		0.003 (0.002)			
Prior partner size ($t - 1$)			0.077** (0.025)		
Prior positional prominence ($t - 1$)				0.094** (0.022)	
Prior network cohesion ($t - 1$)					0.045 (0.050)
Focal firm reputation	-0.025 (0.022)	-0.045 (0.127)	0.054# (0.028)	0.384 (0.225)	-0.001# (0.001)
Calendar time	-0.02 (0.015)	0.648** (0.085)	-0.005* (0.014)	-0.971** (0.182)	0.001* (0.000)
Industry					
Manufacturing	-0.080 (0.071)	-0.016 (0.397)	0.083* (0.172)	0.853# (0.437)	-0.001 (0.003)
Transportation	-0.169 (0.105)	0.128 (0.839)	0.217* (0.350)	-0.445 (0.535)	0.000 (0.004)
Communication	-0.019 (0.142)	-0.022 (0.893)	-0.067 (0.193)	-1.070# (0.618)	-0.001 (0.003)
Service	0.019 (0.080)	-0.449 (0.574)	-0.174 (0.228)	-0.308 (0.379)	0.001* (0.004)
Wholesale trade	-0.157 (0.116)	0.053 (0.555)	0.082 (0.204)	-0.187 (0.438)	0.004 (0.005)
Finance	-0.076 (0.073)	-0.147 (0.492)	0.315# (0.186)	0.094 (0.402)	-0.002 (0.003)
Others (reference)					
Total direct bank ties	0.018 (0.020)	-0.263* (0.125)	-0.093** (0.029)	0.495 (0.353)	-0.001* (0.001)
Debt-equity ratio	-0.001 (0.001)	0.0007 (0.005)	0.0004 (0.001)	0.005 (0.013)	0.000 (0.000)
Board size	0.004 (0.005)	0.063 (0.046)	0.006 (0.011)	0.155** (0.060)	-0.001# (0.000)
Constant	0.047 (0.234)	-3.138* (1.235)	6.614** (0.414)	-5.720* (2.552)	0.028** (0.009)
<i>N</i> (firm years)	800	800	800	800	800
Wald chi-square	40.810**	161.100**	71.360	65.69**	52.72**

Notes. Robust standard errors in parentheses.
 # $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, two-tailed tests.

ties are, on average, of lower quality than its lost ties. As can be seen in Model 6, unethical acts result in a firm's new partners having lower *Fortune* reputations than its former partners had. Models 7 and 8, however, indicate that there is no significant effect of unethical firm acts on the profitability and size differences between the new ties and former ties.

The results of Models 9–11 further reveal that a firm's commission of an unethical act is related to a significant reduction in the average profitability of the firms that stayed on the firm's board. These acts also have a marginally significant ($p < 0.1$) effect on the average size of the firms that stayed on the board. Thus the results from Table 4 suggest that while the changes in

Table 4 Effects of Unethical Acts on the Likelihood of Having New Partners of Lower Net Quality Than Previous Partners GEE Estimates of Generalized Logit Models

Variable	Added partners are lower reputation 6	Added partners are lower profitability 7	Added partners are smaller size 8	Remaining partners' reputation 9	Remaining partners' profitability 10	Remaining partners' size 11
Number of unethical acts (prior three years)	0.422* (0.182)	0.058 (0.170)	0.003 (0.139)	−0.057 (0.046)	−2.407** (0.663)	−0.102# (0.060)
Firm profitability	0.020 (0.013)	−0.005 (0.012)	0.004 (0.016)	−0.005 (0.004)	−0.038 (0.059)	0.003 (0.005)
(Log) firm sales	−0.089 (0.128)	0.095 (0.111)	0.051 (0.112)	−0.043 (0.034)	0.531 (0.439)	0.077# (0.040)
Prior partner reputation ($t - 1$)	0.169# (0.089)			0.036 (0.026)		
Prior partner profitability ($t - 1$)		0.026 (0.020)			0.004 (0.039)	
Prior partner size ($t - 1$)			0.093 (0.063)			0.033 (0.027)
Focal firm reputation	−0.031 (0.101)	0.055 (0.094)	−0.052 (0.089)	0.037# (0.023)	0.143 (0.358)	0.0003 (0.032)
Calendar time	−0.502** (0.079)	−0.031** (0.073)	−0.108# (0.061)	−0.055** (0.016)	0.482 (0.308)	0.011 (0.026)
Industry						
Manufacturing	−0.018 (0.396)	0.531 (0.375)	0.436 (0.353)	0.188# (0.114)	−0.016 (1.276)	−0.077 (0.116)
Transportation	−0.23** (0.611)	0.208 (0.734)	1.74** (0.428)	−0.057 (0.223)	0.745 (2.468)	0.448* (0.221)
Communication	−0.775 (0.663)	0.316 (0.634)	0.927* (0.456)	0.193 (0.188)	1.836 (2.081)	0.105 (0.196)
Service	0.071* (0.451)	0.991* (0.453)	0.738# (0.412)	0.562** (0.151)	2.175 (1.650)	−0.064 (0.149)
Wholesale trade	0.574 (0.557)	−0.049 (0.442)	0.801 (0.543)	0.23 (0.179)	−0.975 (1.962)	0.089 (0.177)
Finance	0.023 (0.485)	0.518 (0.465)	0.426 (0.416)	0.129 (0.139)	0.745 (1.535)	0.104 (0.139)
Others (reference)						
Total bank ties	0.025 (0.044)	0.18** (0.036)	0.042 (0.031)	0.074** (0.011)	0.075 (0.140)	−0.045** (0.013)
Debt-equity ratio	−0.009 (0.007)	0.020 (0.015)	0.013 (0.009)	−0.002 (0.002)	0.021 (0.036)	0.002 (0.003)
Board size	−0.039 (0.035)	−0.003 (0.028)	−0.043 (0.029)	−0.009 (0.009)	0.009 (0.115)	0.001 (0.010)
Constant	1.762 (1.270)	−1.323 (1.010)	−1.26 (1.168)	1.301** (0.330)	−5.608 (4.133)	7.861** (0.430)
N (firm years)	800	800	800	800	800	800
Wald chi-square	52.85**	55.43**	37.28**	92.43**	21.81	35.73**

Notes. Robust standard errors in parentheses.

$p < 0.1$, * $p < 0.05$, ** $p < 0.01$, two-tailed tests.

the reputation of network partners are driven by higher reputation firms dropping out and lower reputation firms joining the firm's network, the changes in the profitability (and possibly the size) of the network partners are driven by changing quality of the firms that remain in the network. We discuss possible reasons for this effect later in this paper.

Returning to Table 3, in Model 4 of Table 3, we use positional prominence as the dependent variable, and in

Model 5, we use network cohesion. In H3, we had predicted that positional prominence would decline after the commission of an unethical act. As can be seen in Model 4, the number of unethical acts has a negative and marginally significant ($p < 0.1$) effect on prominence. In H4, we had predicted that network cohesion would decline after the commission of an unethical act. As can be seen in Model 5, the number of unethical acts has a significant negative effect on network cohesion.

Table 5 Effect of Act Illegitimacy on Partner Quality, Positional Prominence, and Network Cohesion GEE Estimates of Generalized Regression Models with Heckman Sample Selection

Variable	Partner reputation 12	Partner profitability 13	Partner size 14	Positional prominence 15	Network cohesion 16
Average illegitimacy of acts (prior three years)	-0.196* (0.097)	-1.825* (0.766)	0.007 (0.147)	0.067 (0.052)	-0.002 (0.001)
Number of unethical acts (prior three years)	-0.193** (0.070)	-0.540 (0.435)	-0.175# (0.097)	-0.044 (0.039)	0.001 (0.001)
Firm profitability	0.004 (0.006)	0.028* (0.030)	-0.002 (0.009)	-0.018* (0.008)	0.000 (0.000)
(Log) firm sales	0.034 (0.044)	0.323 (0.244)	0.067 (0.059)	-0.009 (0.027)	-0.001* (0.001)
Prior partner reputation ($t - 1$)	0.395** (0.056)				
Prior partner profitability ($t - 1$)		0.007 (0.013)			
Prior partner size ($t - 1$)			0.305** (0.069)		
Prior positional prominence ($t - 1$)				0.418** (0.093)	
Prior network cohesion ($t - 1$)					0.331** (0.066)
Focal firm reputation	0.012 (0.043)	-0.398# (0.209)	0.036 (0.061)	-0.038 (0.026)	-0.002* (0.001)
Calendar time	0.026 (0.063)	-0.778* (0.307)	0.503** (0.092)	0.021 (0.036)	0.002 (0.002)
Industry					
Manufacturing	-0.122# (0.184)	0.039 (0.613)	-0.016 (0.384)	-0.009 (0.098)	0.0004 (0.003)
Transportation	-0.208* (0.200)	1.452# (0.806)	-0.257 (0.475)	-0.071 (0.150)	-0.005 (0.003)
Communication	-0.121 (0.223)	-1.603 (1.910)	-0.255 (0.426)	-0.004 (0.109)	-0.001 (0.003)
Service	-0.105 (0.225)	-0.447 (0.924)	0.087 (0.416)	-0.071 (0.104)	-0.004 (0.004)
Wholesale trade	-0.250 (0.284)	-0.324 (0.981)	0.101 (0.434)	-0.235# (0.138)	-0.006 (0.006)
Finance	-0.118 (0.185)	0.202 (0.733)	0.051 (0.401)	0.087 (0.112)	0.0002 (0.003)
Others (reference)					
Total direct bank ties	-0.006 (0.036)	-0.051 (0.219)	-0.011 (0.046)	-0.060** (0.019)	-0.001# (0.000)
Debt-equity ratio	-0.004 (0.009)	0.045 (0.038)	0.017 (0.020)	-0.011# (0.007)	-0.0003 (0.0003)
Board size	-0.005 (0.010)	0.028 (0.069)	-0.002 (0.021)	0.006 (0.008)	-0.0004# (0.0002)
Inverse of Mills ratio	0.020 (0.048)	-0.338 (0.357)	0.012 (0.055)	0.005 (0.027)	0.0003 (0.001)
Constant	0.517 (0.607)	4.994** (3.426)	3.623** (0.970)	-0.025 (0.440)	0.023* (0.011)
N (firm years)	164	164	164	164	164
Wald chi-square	122.04**	39.89**	97.63**	150.39**	130.37**

Notes. Robust standard errors in parentheses.
 # $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, two-tailed tests.

Firms that committed more unethical acts have networks that are less cohesive (i.e., fewer indirect ties among their partners) than firms that committed fewer or no unethical acts. Thus, H3 receives weak support, and H4 strong support—unethical acts are marginally related to

reduced network prominence and significantly related to reduced network cohesion.

Table 5 presents the results for our tests of Hypotheses 5 and 6, which state that firms that committed unethical acts of higher illegitimacy are more likely to experience a

decline in the quality of network partners, network prominence, and cohesion. We modeled the dependent variables in Table 5 with only firms that committed unethical acts in the prior three years during 1990–1993, because firms that did not commit any unethical acts would not have an illegitimacy score. However, as noted earlier, we used the Heckman procedure in these models to correct for any bias this selection process may introduce.

As can be seen in Models 12–14 of Table 5, there is evidence that the degree of illegitimacy of the act does significantly affect the level of change in partner quality. Model 12 shows that the more illegitimate the act committed by the focal firm, the greater the change in their partner's reputation (as measured by the *Fortune* reputation scale). For example, if we compare a firm that committed obstruction of justice (a fairly illegitimate act) with a firm that committed tax evasion (an act with a much lower degree of illegitimacy), we see that obstruction of justice moves average partner ranking down 0.109 standard deviations (or 9 positions in a sample of 300 ranked firms) more than tax evasion does. In addition, Model 13 shows that the more illegitimate the unethical act committed by the focal firm, the greater the change in their partner's profitability. As shown in Model 14, however, the change in partner size is not affected by the illegitimacy of the act. Overall, however, acts that are more illegitimate do seem to carry a larger penalty in terms of partner quality (when measured as partner reputation and partner profitability). These results suggest that firms with good reputations and high levels of profitability are sensitive to the type of unethical act that the focal firm committed. Large firms, however, are sensitive to whether their partners committed unethical acts but are not as sensitive to the type of act committed.

Finally, Models 15 and 16 present the results of our tests of H6, which state that firms that committed unethical acts of higher illegitimacy are more likely to experience a decline in prominence and cohesion. Models 15 and 16 show that the effect of the degree of illegitimacy on network cohesion and prominence is not significant. Thus, reductions in cohesion and prominence are independent of the degree of illegitimacy of the act that was committed.

Overall, these results show that the quality of a firm's network partners declines as a result of unethical acts. In addition, firms that commit more illegitimate acts have a greater decline in network partner quality in terms of reputation and profitability than firms that commit less illegitimate acts. There is also evidence that this decline is caused by lower quality partners replacing higher quality partners, but only for reputation as an indicator of quality. Network structure as an indicator of quality is also affected in that firms that committed unethical acts experience a decline in network cohesion and possibly prominence, but this effect does not vary with the degree of illegitimacy of the act.

Discussion

Our study shows how legitimacy concerns subsequent to unethical acts play an important role in affecting the networks of firms. After the commission of an unethical act, firms have networks that include partners that are, on average, lower in reputation, smaller, less profitable, and possibly less central than those initially in the network. After the commission of an unethical act, firms also experience a significant decline in network cohesion. These findings, combined with the fact that the decline in reputation and profitability are stronger for more illegitimate acts, suggest that legitimacy concerns can lead network partners to distance themselves from less legitimate partners. Moreover, as we controlled for firm sales, profitability, and debt-equity ratio, which are general indicators of firm resource levels, our results indicate that the effects of legitimacy concerns are independent of resource concerns.

Our results also suggest that firms with better reputations are more sensitive to changes in the legitimacy of firms to whom they are tied than are firms with poorer reputations in that they are more likely to sever network connections. Interestingly, the decline in partner profitability and size are because of changes in the network partners that remain in the network, and not because of the replacement of larger, more profitable firms with smaller, less profitable ones. The decline in the performance and size of these remaining firms may simply result from the negative impact of network ties to firms of low legitimacy as suggested in other studies (e.g., Baum and Oliver 1991). If so, this strengthens the argument that partners will be wary of affiliating with a firm that has committed such acts. This analysis is necessarily speculative, however, and future research could profit from a more in-depth consideration of the various concerns that partners might have in affiliating with a firm that committed unethical acts and effects on partners who stay in a network.

Implications

Our results have implications for network and institutional/legitimacy theories of organizations. First, as noted earlier, while there are many studies investigating the creation of firm networks, there are few that examine the breaking of network ties. Showing that legitimacy concerns cause the breaking of some ties and subsequent replacement by others of lower quality indicates that legitimacy has an important effect on network dynamics. Organizational scholars have suggested that inter-firm networks are relatively stable and that this stability has significant strategic importance for firms (Stokman et al. 1988). Director networks tend to be stable because one function of these networks is to bring elites together (Useem 1984). Nevertheless, significant changes in inter-firm networks are possible under certain conditions, such as when environment is uncertain, trust is needed, or

formal coordination is the purpose of interlocks (Koenig et al. 1979, Gulati 1998, Haunschild 1994, Palmer 1983). The contribution of our study is to show an additional condition driving network change: the commission of unethical acts. The implication of this effect is that greater levels of unethical activities lead to greater flux in firm's interorganizational networks, as firms leave and others take their place. In addition, network cohesion changes as well-connected firms leave and less well-connected firms take their place. This shows the dissolution of network structures, and the instability of overall network characteristics under some conditions.

Another interesting implication of our findings is that societal perceptions of the illegitimacy of actions drive some network changes (those related to the quality of network partners). We specifically measured perceptions of the relative illegitimacy of specific firm actions in a general public audience, and found them to be associated with the level of partner quality changes. This supports a key component of institutional theory—that organizations face pressures to conform to societal norms and expectations (e.g., Meyer and Rowan 1977, Zucker 1977). In this case, it is the partners of firms engaging in illegitimate acts who are responding to these pressures by breaking ties with these firms. Firms with good reputations or profitability appear to be particularly sensitive to this concern. An interesting implication for institutional theory is that there are firms that will affiliate after the violation of societal norms and expectations, but these are lower quality firms. This may reflect an impact of legitimacy concerns on the status hierarchy (Podolny 1994).

Third, the changes in network structure we found have important implications for network theory. The decline in prominence after the commission of an unethical act means that the firm is connected to less prestigious actors. The decline in cohesion means the firm will have less reliable information access, less trust in the network, and weaker norms enforcement from network partners (Reagans and McEvily 2003). Of course, the reduction in cohesion also implies that gaps in the network of partners could be beneficial in terms of less constraint over firm actions and more information diversity (Burt 1992), but recent research has suggested that optimal networks contain a mixture of cohesive elements and structural holes (concepts not necessarily in opposition to each other) (Burt 2000, Reagans and McEvily 2003). Future work that investigates the exact implications of the network changes we found in these non gratae firms is needed.

Finally, our study also has implications for the work on illegal and unethical activities. This work has tended to focus on the financial consequences of such activities. We add a network perspective to this work and show that such activities have important network consequences as well. While not the focus of our study, future

research could benefit from linking the negative network consequences we find in this study to the negative financial consequences found in other work (e.g., Baucus and Baucus 1997), and our finding that firms remaining in the networks of those engaging in unethical acts are smaller and less profitable, suggests that such a link could be fruitful. For example, the loss of quality partners and network cohesion may be the reason why recent studies linking illegal firm actions to poor financial performance show that the negative effect on performance is delayed on average by five years (Baucus and Baucus 1997). It takes time for firms to lose network partners; directors generally do not quit overnight. It may take longer still for any financial effect of network changes to appear. Thus the delayed negative financial impact on firms might be because of the gradual loss of valuable network positions.

Future Studies

Future improvements of this study can come from several directions. First, we did not distinguish in our study between unethical acts attributable to top management and those attributable to employees lower in the organization. It could be that those acts attributable to top management will carry greater network penalties, as it is top managers that create these interlock networks. We did, however, conduct a survey of 40 individuals asking them to assess, for each type of act, how likely it was that the act would have been the fault of top management as opposed to someone lower in the organization. We analyzed these results and found no significant differences for our hypothesized results by level of top management attribution (results available from the authors). Of course, these were only attributions for the general categories, not for each specific act in question. Thus, future research could profit from a more detailed examination of specific acts and whether they are attributable to top management. The lack of differences, however, could also be because of director concern with any act, whether attributable to top management or not. There are suggestions in top management team research that top managers will be blamed for any negative outcome (Meindl et al. 1985), in part, because even if lower level employees are to blame, top management will be seen as having created a climate that allows (or at least does not discourage) such behaviors.

Second, an interesting possibility is that when an unethical act takes the form of discrimination covered under the 1964 Civil Rights Act, a firm may actively seek more minority directors in an effort to regain lost legitimacy. Such directors might come from lower quality firms (e.g., Harrigan 1981, Bilimoria and Piderit 1994). Investigating this possibility, along with other network change motivations on the part of firms that commit unethical acts could enrich our understanding of the mechanisms that underlie our results.

Third, as we noted earlier, some scholars have raised concerns about the use of the *Fortune's* “Most Admired Corporation” list as a measure of firm reputation because of the particular sampling process and survey items used by the *Fortune's* survey (e.g., Fombrun et al. 2000). As we argued earlier, this concern is alleviated by our use of multiple measures. Further, it is also a fact that being on the *Fortune* list can generate positive publicity for firms and improve both a firm's legitimacy and its reputation. In fact, the results of our study suggest that the *Fortune* reputation ranking might be an asset that firms are protecting, as those firms with good reputations are most likely to leave the networks of others who have committed unethical acts. Nonetheless, future studies using different reputation measures should increase our confidence in any findings on the behavior of firms with different reputations.

A final interesting extension of this study would be to look into the effects of timing of unethical acts, as it could be that more acts within a short period would have stronger negative effects than acts that are more spread out over time. Also, it would be interesting to see whether firms recover from the negative network effects and how long that takes.

Conclusion

This study provides empirical evidence of the impact of unethical firm acts on changes in major American corporate networks. We found that unethical acts have negative consequences for network partner quality and network structure. We also found evidence that legitimacy concerns seem to separate firms from each other and create a legitimacy hierarchy in that firms with declining legitimacy will lose higher quality partners and gain lower quality partners. Given that firms continue to engage in unethical acts, the consequences of these acts for our understanding of firm networks is clearly important and deserving of further study.

Endnotes

¹It is likely that the commission of an unethical act will affect all three concepts: reputation, legitimacy, and status. Reputation is likely to decline as “goodness” is questioned after the unethical act (cf. the Enron example earlier). Legitimacy is likely to decline as audiences see the organization as not acting in accordance with societal norms, and status is affected as relative standing declines because of reputation and legitimacy concerns.

²See also Burt (1992, pp. 54–56) for details on this measure.

³We searched the mentioned publications with the following key words and firm name for each firm in our sample: unlawful, illegal, illegitimate, unethical, discrimination, harass, molest, antitrust, insider trading, greenmail, fraud, deceit, extortion, misrepresentation, criminal, illicit, proscribed, prohibited, felonious, nefarious, wrongful, race, gender, sex, bribe, bribery, campaign, price fixing, tax evasion, guilt, fine, paid fine, or not settled. Variations on these words (e.g.,

harassment, harassing) were also searched. Two researchers (one of whom is a licensed attorney) then read each article to determine whether it indeed described an illegal or unethical act.

⁴We also conducted a series of sensitivity analyses to determine whether using average illegitimacy is appropriate. For example, we reanalyzed the data to see whether the most egregious act carried more explanatory power than the least egregious acts by looking at the subsample of egregious acts alone. Results show that while the most egregious acts are highly significant, the less egregious acts also carry explanatory power. We also tried different combinations of acts and different methods of aggregating scores (e.g., using the sum instead of the average). Results of these analyses show that using average scores is the best method of aggregation in terms of producing the best model fit and avoiding multicollinearity. Results for other aggregation methods are available from the authors.

⁵We also used a survey with a forced ranking technique to assess our measure of legitimacy. We asked a different set of 44 randomly selected individuals to sort the cards with all the acts according to their level of legitimacy. The robustness of our measure is shown by the fact that the mean ranking of the scores using this technique is very similar to that of the scale, after adjusting for scaling differences. The significance of our hypothesized results was no different using this card sort data.

⁶The estimated coefficients and standard errors from the random-effects probit model are as follows: firm profitability, -0.009 (0.013); (log) firm sales, 0.624 (0.105); manufacturing industry, 0.613 (0.361); transportation industry, 0.568 (0.646); communication, 0.729 (0.537); service, 0.379 (0.461); wholesale trade, 0.273 (0.541); and finance, 0.067 (0.442). The Wald chi-square is 40.42. The inverse of Mills' ratio was then calculated by dividing the normal density of the predicted probability by the standard cumulative normal of the predicted probability obtained from the probit model.

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