Do Facilities with Distant Headquarters Pollute More? How Civic Engagement Conditions the Environmental Performance of Absentee Managed Plants*

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Abstract

Scholars agree that due to advances in transportation and communication technologies, firms can extend their reach and more easily externalize their pollution by setting up plants in far-flung, less regulated areas. They also concur that absentee managed plants or facilities with remote headquarters are rapidly becoming the modal type of industrial organization. However, they have yet to examine the environmental performance of these plants and how their propensity to pollute is conditioned by the types of communities that harbor them. This reflects a more general failure on the part of social scientists to study the impact that different organizational forms have on the physical environment. Using the EPA's newly published 2000 Toxics Release Inventory, we test the direct and interactive effects of absentee management on the environmental performance of chemical plants in the U.S. Findings reveal that absentee managed plants emit more toxins, on average, than other plants. However, when we take into account the amount of chemicals that plants have on-site and other factors that influence facilities' emissions, we discover that the environmental performance of absentee managed plants is no worse than that of other plants. Whether plants with distant headquarters emit more toxins largely depends on the presence of local institutions that facilitate civic engagement. When embedded in communities with more associations, churches, and "third places," absentee managed plants emit significantly fewer toxins.

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There are few human-made environmental problems that are not caused by or through organizations (Clarke 1989; Perrow 1997). While individuals' lifestyles, consumption habits, and so on contribute to environmental degradation (York, Rosa & Dietz 2003), many, if not most, pollutants are emitted at the site of production or have their source in industrial organizations. And yet sociologists have rarely examined the impact that different organizational forms have on pollution. Nowhere is this omission more obvious than in research on the consequences of firms expanding and decentralizing production across space.

Sociologists have long speculated that factories with distant headquarters are a threat to communities and their physical environments. Over fifty years ago, when the military-industrial complex was growing and "war plants" were being created outside the nation's industrial heartland, C. Wright Mills warned that absentee managed plants are the "puppets" of "big business" and will exploit the social and natural resources of their host communities (Mills & Ulmer 1946 [1970]; see also Hooks & Bloomquist 1992). Today, as the winds of globalization disperse still more facilities across the landscape, researchers continue to express concerns about the local impact of absentee managed plants. In particular, environmental and organizational sociologists now worry that due to advances in transportation and communication technologies, more corporations will externalize their pollution by setting up plants in far-flung, less regulated areas (Eskelund & Harrison 1998; Muthukumara & Wheeler 1998; see also Barnet & Muller 1974; Bunker 1984; Ehrhardt-Martinez 1998).

However, like Mills, environmental and organizational sociologists have not analyzed the environmental performance of absentee managed plants. Nor have they explored how their propensity to pollute varies by the types of communities that harbor them. Environmental sociologists have focused on the environmental harm caused by such global factors as long economic cycles and the world-system (Chew 1999; Grimes, Roberts & Manale 1993), whereas organizational scholars have concentrated on the financial and employment consequences of globalization (Bartlett & Ghoshal 1993; Dickens 1999; Milkman 1991). To begin to remedy this situation, we examine how the emissions of absentee managed plants are conditioned by their host communities.

This topic is a particularly important one. Because more companies can manage operations from afar, absentee managed plants are rapidly becoming the modal type of industrial organization. Hence, if they are an environmental threat, as some suggest, then a type of organizational virus is spreading throughout the ecosystem that demands analysis (see also Young & Lyson 1993). In addition, there is a substantial body of sociological research that suggests absentee managed plants influence social outcomes, including poverty (Young & Lyson 1993), infant mortality (Wimberly 1990), industrial conflict (Kerr & Siegel 1954), and underdevelopment (Wallerstein 1974). Whether absentee

managed plants also impact environmental outcomes remains to be determined. Finally, there is a widespread perception within the antiglobalization movement today that absentee managed plants pollute more than locally managed ones. Critics of globalization assume further, like Mills, that there is little that local communities themselves can do about this problem because their survival depends on attracting and accommodating footloose plants (Dembo, Morehouse & Wykle 1990; Mander & Goldsmith 1996; Shuman 1998).

We contend the latter logic is simplistic on at least two counts. First, to suggest that communities are powerless to "outside predators" is to ignore the fact that responsibility for protecting the environment (and workers) from the forces of globalization has gradually devolved from the nation-state to the local level (Tolbert, Lyson & Irwin 1998; cf. Frank, Hironaka & Schofer 2000). This is true in developing countries where pollution is often unregulated by national governments and local communities must therefore negotiate environmental standards with manufacturers (Hartman, Huq & Wheeler 1997). It is true as well in developed countries like the U.S. where command-and-control approaches to regulating industrial toxins have been slowly replaced by strategies that rely on the participation of local citizens (Ringquist 1995).

Second, critics overlook recent work on civil society and structural embeddedness (Granovetter 1985; Piore & Sabel 1984; Putnam 2000; Tolbert et al. 1998) that speaks to the ability of communities to root organizations in place and control their behavior through informal means. This research suggests that while a community can do little to change the *physical* distance between itself and an absentee managed plant's headquarters, it can reduce the *social* distance between itself and the plant by incorporating the headquarters in a dense network of local institutions. In this way, absentee managed plants may come to identify with their host community and work to maintain its physical integrity. In this article, we demonstrate that absentee managed plants emit fewer toxins when embedded in communities that are civically engaged or rich in social capital.

Using the Environmental Protection Agency's newly published 2000 Toxics Release Inventory (U.S. Environmental Protection Agency 2002), we test the direct and interactive effects of absentee management on the emissions of chemical plants in the U.S. The 2000 edition of the Toxic Release Inventory is not only more current than the editions used in previous analyses of chemical plants' pollution behavior (Grant, Jones & Bergesen 2002), but also covers more than twice as many industrial toxins. We focus on the U.S. for reasons of data availability and because the spatial restructuring of production has been especially great in this country during the global era (Brady & Wallace 2000; Grant 1995). Many factories have migrated from the corporate centers of the Rustbelt region to the "better business climates" of the Sunbelt states in

response to global competition (Bluestone & Harrison 1982; Grant & Wallace 1994); at the same time, other plants operated by foreign firms have moved to the U.S. to seize new investment opportunities (Brady & Wallace 2000; Grant & Hutchinson 1996). As a result of these and related developments, an unprecedented number of plants in the U.S. are now absentee managed. We study the effects of absentee management at the facility (as opposed to firm) level because industrial toxins are emitted at specific production sites and the environmental performance of individual facilities is of more immediate concern to local communities (Hartman, Huq & Wheeler 1997).

Globalization, Absentee Management, and Pollution

Proponents and critics of globalization offer starkly different views about the environmental performance of absentee managed plants. Proponents suggest that plants with remote headquarters often use more efficient and cleaner technologies than locally managed ones. They argue that as companies mature and develop standardized production processes, they decentralize their branches to periphery regions to capture the efficiencies of their best input-saving technologies (Mol 1995; Mol & Sonnenfeld 2002; Norton & Rees 1979; Vernon 1966). Proponents of globalization also contend that global firms typically have more uniform operating procedures and greater resources to invest in environmental initiatives. They suggest further that because environmental groups are eager to sue companies capable of paying large settlements, the satellite plants of major corporations are under intense pressure from their headquarters to manage their chemicals effectively as possible and perhaps even overcomply with regulations (see Arora & Cason 1995; Hamilton 1995).

In contrast, critics of globalization argue that firms are increasing their power by decentralizing production, a phenomenon Harrison describes as "concentration without centralization" (Harrison 1994). According to these scholars, firms often relocate plants to distant areas as a way to avoid regulation and externalize their pollution. They suggest, therefore, that absentee managed plants are among the dirtiest. Dependency researchers, for example, argue that the maquiladoras created in the free trade zones of northern Mexico and other parts of Latin American are particularly poor environmental stewards (Adeola 2000; Simon 2000; see also Dasgupta, Siddhartha, Knight, and Love 1999). They predict that as international competition for jobs intensifies, developing countries will feel pressure to create additional "pollution havens" to attract plants (see Muthukumara and Wheeler 1998; Eskelund and Harrison 1998). The same dynamic allegedly operates within the United States, where many chemical firms have tried to flee costly regulations and fend off their foreign competition by relocating plants in the "better business climates" of the Sunbelt states

(Feiock & Rowland 1991). This strategy reinforces an already strong tendency among multi-locational businesses to stress the exchange value of natural places over their potential use values, i.e., to treat them as expendable commodities (Logan & Molotch 1989). Consistent with this reasoning, Davis (1992) finds that the owners of chemical companies with multiple out-of-state plants are significantly less willing to sacrifice production to meet environmental standards.

Figures 1 and 2 report how the emission[1] levels of chemical plants with out-of-state[2] headquarters compare with the emission levels of other chemical plants according to the 2000 Toxics Release Inventory. Since the latter's inception in the late 1980s, the number of industrial chemicals determined to be toxic and therefore tracked by the EPA has more than doubled from 319 to 667 chemicals. Figure 1 compares the amount of toxins released by different plants using the EPA's original list of 319 chemicals. It shows that the average emission level of plants with out-of-state headquarters (42 million toxic pounds) is approximately 24% greater than the average emission level of other plants (34 million toxic pounds). Figure 2 shows that when we use the expanded or current list of toxins, the differences between the two plant types are even more pronounced. Absentee managed plants' average emission level (99 million toxic pounds) is roughly 57% more than that of other plants (63 million toxic pounds). Hence, there is empirical support for critics' claim that toxic emissions are concentrated in plants that are managed from afar, particularly in terms of the expanded set of toxins now used by the EPA.

Of course, it could be that absentee managed plants emit more toxins, on average, simply because they use more toxic chemicals. That is, firms may be emboldened to process larger quantities of chemicals when they can do so from a safe distance. Hence, when one takes into account the amount of toxins that plants have at their disposal, it may be that plants with distant headquarters are no more prone to pollute than other plants. Even so, the total amount of toxins emitted by plants is of paramount importance to local communities. Also, while communities may be unable to set formal limits on how many toxins a plant processes, communities can informally pressure a plant to manage its chemicals effectively, i.e., to minimize its toxic releases. Whether communities can reduce the emissions of plants with the least attachment to place — absentee managed ones — is the subject of our inquiry.

Importantly, in assuming that communities are powerless to outside organizations, critics ignore the fact that communities are also organizations with problem solving capacities. Literature on structural embeddedness (Granovetter 1985; Piore & Sabel 1984; Romo & Schwartz 1995; Storper & Walker 1989; see also Selznick 1949) suggests that businesses rarely operate in a social vacuum. Instead, they are subject to pressure from other kinds of organizations, including their host communities (see also Garcia-Johnson 1998;

Garcia-Johnson, Gereffi & Sasser 2000). The same literature also suggests that the types of informal pressures exerted by these other organizations can have as strong an impact on business behavior as market forces. Below, we build on these insights to suggest how the emissions of absentee managed plants are conditioned by the civic engagement of their host communities.

The Civic Engagement of Pollution

Rather than presuming that absentee managed plants will or will not exploit communities and their habitats, literature on civil society suggests the conditions under which such plants might identify with local places and seek to preserve their physical integrity. This research stresses the ability of communities, as organizations, to address problems, including those posed by "external" organizations. This literature has its origins in the classical thought of Tocqueville ([1835] 1862), Durkheim ([1933] 1984) and the early Chicago school, as well as the recent writings of Dahl (1971), Key (1984), Bollen (1980), and especially Etzioni (1996) and Putnam (1993, 2000). According to these scholars, local institutions such as churches, associations, and so-called "third places" (barber shops, cafes, and other sites of informal public life) create community solidarity and serve as forums for civic engagement. In turn, these institutions help root actors to places and enhance the local quality of life.

Consistent with this logic, several studies document how residents and business leaders become integrated in communities through their participation in churches and volunteer associations (for a review of these studies, see Cassel 1999). Others report that in communities with more social capital, rates of poverty, unemployment, and crime tend to be lower (Tolbert, Lyson & Irwin 1998; Sampson & Groves 1989; see also Green & Haines 2001). That civic engagement might mitigate the harmful social effects of absentee managed plants has been examined by Lyson and his colleagues. They find that in agriculture dependent counties dominated by absentee managed farms, community welfare is higher when residents are civically engaged (Lyson, Torres & Welsh 2001). In another study, they find that in counties with many absentee managed plants, rates of poverty and infant mortality are lower where civic engagement is high (Young & Lyson 1993).

Going one step further, some scholars suggest that civic engagement may also influence environmental outcomes. Mesch and Manor (1998), for example, argue that residents and business leaders develop an emotional bond with their neighborhood's physical environment as they invest more of themselves in local institutions. Scholars also document how civically engaged residents succeed in preserving their neighborhoods' physical beauty (Mesch 1996; Molotch, Freudenberg & Paulsen 2000) and can persuade businesses to contribute to local environmental projects (Sklar & Ames 1983).

Particularly relevant to our study, scholars at the World Bank have begun exploring how civic engagement affects the emissions of individual facilities (Hartman, Huq & Wheeler 1997; Pargul & Wheeler 1995; Pargal et al. 2002). They contend that in developing countries, where formal regulation (e.g., uniform air quality standards, mandated pollution technologies) tends to be weak or nonexistent, informal regulation exercised by communities (e.g., public appeals, protests) may strongly influence corporate environmental performance. They speculate that civic engagement may also influence certain types of corporate pollution in the U.S. that are largely unregulated, such as toxins released by manufacturers.[3]

In short, a growing body of research suggests that communities can improve the environmental performance of manufacturing plants by reducing the *social* distance between themselves and plants. According to this work, unless plants develop social ties to their host communities, they are unlikely to participate in public conversations about local environmental priorities. However, where there are numerous institutional settings that allow residents and plant managers to meet and develop a common appreciation of place, plants are more likely to participate in public conversations about the environment and curb their emissions.

While several scholars concur that civic engagement matters for the environment, they disagree over the mechanisms involved in the civic engagement of pollution. They also differ over whether civic engagement has a direct or interactive effect on corporate environmental performance. Scholars, like those at the World Bank, who subscribe to a strong version of the social capital model, suggest that local institutions curb pollution by enabling residents to mobilize against polluters and voice their greviances. They suggest further that civic engagement improves the environmental performance of all plants, whether absentee or locally managed, because all are prone to pollute. Hence, they predict that civic engagement directly affects emissions.

In contrast, other scholars, like Lyson and his colleagues, who subscribe to a weaker or qualified version of the social capital model, emphasize how local institutions function to coopt certain types of businesses (see also Galaskiewicz 1991). They suggest that civic communities emerge out of local clusters of small, locally owned and managed establishments. While not denying that large corporations can and do in fact operate in such communities, they contend that without a class of small business owners, the odds of establishing a civic community are considerably less. Thus, there are two types of communities or local economies, those largely organized by corporate capitalism and those by community capitalism. Workers in the former tend to look outward to the global economy and their allegiance lies more with the firm than the community. Workers and residents of the latter look inward to the community since it is their primary source of support.

According to a qualified version of the social capital model, civic communities are best understood as "problem solving" places. Their civic structures (e.g., churches, voluntary associations, "third places") provide social spaces where citizens can assemble and address community issues (see also Barber 1996:285). Put differently, civic institutions provide not so much a format for venting grievances or even instilling a sense of belonging as they create venues for citizens to solve mutual problems like pollution. These problems can be resolved amicably or though direct contestation, but the more such problem-solving places exist, the better equipped a community will be to solve these problems.

It follows from this argument that the problem solving capacity of local communities has special importance for the environmental performance of absentee managed plants. Absentee managers have no motive to behave in a socially and environmentally responsible fashion and therefore will pollute if they can. Local managers would like to pollute but they do not feel they can because they have more personal and material ties to their host community and are integrated in its structures. Local institutions are important, then, because they smother absentee managed plants and their managers with social pressure to behave appropriately in the absence of strong local connections. Thus, they compensate for the lack of such ties. In short, a qualified version of the social capital model would predict that civic engagement has an interactive effect, i.e., local institutions lower the emissions of plants if the latter are absentee managed.

While the idea that civic engagement can protect communities from especially dangerous polluters is reassuring, serious doubts nonetheless remain. Civil society researchers theorize that civic engagement can reduce pollution, but these assertions stand in dire need of empirical analysis. Many remain skeptical, therefore, that the type of informal group phenomena emphasized by civil society theorists affects environmental outcomes (see also Petras 1997). Along similar lines, Portes (1998) argues that while there are demonstrated benefits of social capital for individuals (e.g., findings jobs, avoiding criminal behavior), to suggest that social capital is also a property of communities borders on circular reasoning. He notes a widespread tendency among civil society researchers to examine positive outcomes, such as economic development and low crime rates, and then infer the existence of social capital from the same outcomes. Still others have criticized the civil society thesis for its elitist bias, suggesting that it ignores how factors like class and race may account for both the existence of social capital and its effects (Skocpol 1996:25). Conversely, they sometimes accuse civil society researchers of conflating social capital with these factors. They would note, for instance, that in their examinations of pollution outcomes in developing countries, World Bank researchers routinely use income per capita as their indicator of social capital.

Our study seeks to address these concerns. First, we empirically model the impact of civic engagement on chemical plants' emissions. In the process, we address Portes's complaints about circularity by treating the factors that facilitate civic engagement as separate from their effects. It is probably true, as Portes suggests, that social connectedness cannot be exactly measured at the community level. However, we are able to examine the relationship between pollution and what scholars claim are some of the institutional sources of social connectedness — local churches, associations, and third places. If we find that absentee managed plants emit fewer toxins when embedded in communities with more churches, associations, and third places, this would be consistent with a qualified version of the social capital model, which says that civic engagement is especially important for businesses with weak local ties. Finally, we test our indicators of civic engagement institutions alongside measures of race and class that may explain the former's impact and/or confound them.

Data and Methods

We examine the direct and contingent effects of absentee management on toxic emissions within the U.S. chemical industry. The unit of analysis for this study is the chemical plant and the data file consists of 1859 cases. Since it is at the site of production that industrial toxins are usually emitted, and absentee management is an attribute of individual plants, we focus on pollution outcomes at the plant level rather than the firm level.[4]

To date, the only other study to examine the emissions of U.S. chemical plants is Grant, Jones, and Bergesen (2002), which looks at outcomes for the year 1990. We examine emission outcomes with more recent (2000) and comprehensive data, but also with several additional controls and new key independent variables (absentee management and civic engagement). We conduct a cross-sectional analysis because the remoteness of a plant's headquarters is not likely to fluctuate much from one year to the next, nor is the civic engagement of its surrounding community.[5]

Our dependent variable, toxic emissions, is taken from the EPA's Toxics Release Inventory and is operationalized as the annual pounds of chemicals released on-site (weighted by their toxicity). Plants with high scores on this measure are those with high emission levels. To determine if the causes of emissions differ depending on whether one uses the EPA's original list of chemicals or its more recent, expanded one, we conduct separate analyses of each. Because toxic emissions are highly skewed, we transform the dependent variable when conducting our regression analyses by taking its natural logarithm.

Absentee managed plant is coded as a dummy variable (1 = yes) and defined as any chemical facility whose headquarters is located out of state.[6] While there may be other ways to operationalize absentee management (e.g. miles between a facility and its headquarters), when researchers have examined its effects within the U.S., it has normally been in terms of whether a plant and its headquarters are in the same state (e.g., Bluestone & Harrison 1982; Davis 1992).[7] This is because since the dawning of Reagan's New Federalism, not only has interstate competition for businesses intensified, but states have assumed a larger responsibility for regulating industrial toxins. Hence, the concern is that firms will try to externalize their pollution by locating their plants in other states that offer "more hospitable business climates."

To determine whether the emissions of absentee managed plants are conditioned by the social capital of their host communities, we interact our measure of absentee managed plant with three indicators of civic engagement institutions — (log) number of associations, (log) number of churches, and (log) number of third places in a plant's county. These indicators have also been used by Tolbert, Lyson & Irwin (1998) in their study of civic engagement across U.S. counties.[8] By mapping county-specific counts of associations, churches, and third places onto our data for individual plants, we are able to capture the local institutional context in which a plant is embedded. While none of these indicators directly measures the mechanisms said to be involved in the civic engagement of pollution (e.g., voicing grievances versus instilling loyalty), they do gauge the presence of institutions said to facilitate social connectedness and problem solving. Each indicator is expected to have a negative statistical interaction with absentee managed plant or reduce the latter's emissions.

Our models also control for several other industrial, regulatory, demographic, and organizational factors that are summarized in Table 1 (for a discussion of some of these controls and their operationalizations, see Grant et al. 2002). We conduct analyses of the determinants of emissions using a random effects model available in LIMDEP that specifies plants belonging to the same firm have a shared error. The particular version of the random effects model used here also has an unbalanced design (i.e., it accounts for the fact there is not the same number of plants in each firm).

Findings

Table 2 examines the determinants of chemical plants' emissions using the EPA's original list of toxins or "core chemicals." Looking first at the controls in model 1, we see that log emissions are significantly lower when plants specialize in soaps/detergents. Conversely, log emissions are significantly higher when plants have more chemicals on-site and they and their parent firm are large.

Contrary to what one might expect, state environmental expenditures, voting behavior, and the race/class characteristics of neighborhoods are unrelated to the emission of core chemicals.[9]

Most importantly, we see that net of the various controls, absentee managed branch has no significant direct effect on log emissions. Other analyses not reported here revealed that the inclusion of log toxic chemicals on-site changed the effect of absentee managed plant from positive and significant to nonsignificant. This suggests that absentee managed plants have higher emission levels (see Figure 1) in large part because their potential for emissions is so much greater. Indeed, absentee managed plants store and use, on average, 27 trillion pounds of core chemicals on-site compared with 13 trillion toxic pounds for other plants.

Findings from model 1, therefore, suggest that both critics and supporters of globalization are wrong — absentee management per se has neither a harmful nor a beneficial impact on environmental performance. Still, communities have a special stake in minimizing the emissions of absentee managed plants precisely because the latter use such large quantities of chemicals and they are major culprits of industrial pollution (Figure 1).

This raises the question of whether certain types of communities are more successful than others at lowering absentee managed plants' emissions. Results in model 1 suggest that log associations, log churches, and log third places have no direct bearing on the log emissions of all plants. However, a qualified version of the social capital model (Tolbert et al. 1998) would suggest that these factors may still condition the environmental performance of those plants with the weakest ties to communities — absentee managed ones. In models 2 through 4, we explore this possibility by interacting absentee managed plant with our indicators of civic engagement institutions. Results indicate that the emissions of absentee managed plants are significantly lower when they are located in counties with more associations (model 2), churches (model 3), and third places (model 4).

In Table 3, we replicate our analysis of the determinants of emissions but this time using the EPA's more comprehensive list of toxic chemicals. In model 1, we see, as before, that plants have significantly lower emissions when they specialize in soap/detergents and higher emissions when they process more chemicals, are large, and their parent firm is large. Interestingly, when using the more recent, expanded list of chemicals, plants have significantly higher emissions when located in poorer neighborhoods. While one cannot generalize from this finding that poor neighborhoods are exposed to more absolute amounts of toxins (Bullard 1990), it does speak to how class influences the emissions of plants and the possibility that as more chemicals are added to the EPA's list of toxins, the environmental dangers faced by poor communities will become more obvious.

TABLE 1: Variable Summary

	Definition	Source	Means/S.D.
Dependent Variable			
Log emissions	Log annual pounds of chemicals released on-site (weighted by toxicity)[1]	TRI	12.59/3.88
Key Independent Variables			
Absentee managed plant	Dummy for facilities with out-of-state headquarters (comparison group is all other facilities)	D+B	.35/.47
Log associations	Log number of associations in a county	EA	4.95/1.17
Log churches	Log number of churches in a county	CC	5.57/1.20
Log third places	Log number of small retail establishments in a county	CBP	6.25/1.61
Controls			
Subindustry characteristics:			
Industrial inorganic chemicals	A set of dummy variables representing the specific sector within the chemical	D+B	.13/.34
Plastics	industry to which a facility belongs (comparison group is miscellaneous chemicals)		.13/.34
Drugs			.06/.24
Soaps and eetergents			.09/.29
Paints			.15/.35
Industrial organic chemicals			.17/.37
Agricultural chemicals			.07/.26
Environmental expenditures	Percent of total state expenditures on the environment	NCSL	.01/.01
Percent voted	Percent of county residents who voted inlast national election	CB	.35/.06
Percent poor	Percent of poor residents in zip code area	CB	.12/.05
Percent black	Percent of Black residents in zip code area	CB	.15/.14
Percent Hispanic	Percent of Hispanic residents in zip code area	CB	.10/.13
Log toxic chemicals on-site	Log maximum amount of toxic chemicals used in a year by a plant	TRI	23.78/4.65
Log firm size	Log number of employees in a plant's parent firm D+B		6.45/2.55
Log plant size	Log number of employees in a plant	D+B	4.41/1.44

[2] Figures are for expanded list of chemicals.

CB — U.S. Census Bureau D+B - Dun and Bradstreet TRI - Toxics Release Inventory

CBP — County Business PatternsEA - Encyclopedia of Associations

CC — Census of ChurchesNCSL - National Council of State Legislatures

In model 1, we see once again that the effect of absentee managed plant is non-significant when controlling for other relevant factors, in particular the amount of toxins that a plant uses and stores on-site. The latter suggests that absentee managed plants release more toxins in Figure 2 because they have more toxins at their disposal. On average, absentee managed plants have on-site well over twice as many toxic chemicals ("core" and others) (36 trillion toxic pounds) than locally managed plants (14 trillion toxic pounds).

We also find additional support for a qualified version of the social capital model, which suggests that the emissions of absentee managed plants will vary according to the presence of associations, churches, and third places. The negative sign of the interaction term in model 2 indicates that absentee managed plants have significantly lower emissions when nested in counties with numerous associations. In more substantive terms, findings reveal that if there are no associations in a plant's county, the absentee effect is .186 ($b_x + [b_{xy}]Z$); if 10 associations, the effect is –.082; if 50 associations, the effect is –.271; if 100 associations, the effect is –.353; and if 1000 associations, the absentee effect is —.622 (the sample range for associations is 1 to 3395). This suggests that only a small number of associations need to be in place before absentee managed plants begin to reduce their emissions.

We see in the remaining models that absentee managed plants also have significantly lower emissions when located in counties with numerous churches (model 3) and third places (model 4).[10] Importantly, these interaction effects hold after controlling for a variety of regulatory, political, socio-demographic, and organizational factors that might explain them (refer to the Appendix, which confirms that the correlations between our key independent variables and other organizational and sociodemographic predictors are generally weak).[11] That all three measures of civic engagement reduce the emissions of absentee managed plants speaks to how social connectedness in a variety of institutional forms benefits communities' physical environments (Putnam 1993). In sum, findings in both Tables 2 and 3 support the prediction that absentee managed plants pollute less when embedded in civically engaged communities.[12]

Conclusion

Our goal in this article was to advance our understanding of the environmental degradation caused by different organizational forms. Toward that end, we analyzed the effects of absentee management on chemical plants' environmental performance using the EPA's 2000 Toxics Release Inventory. Findings confirm the suspicion of critics of globalization that absentee managed plants emit greater amounts of toxins. However, results also indicate this is largely because absentee managed plants process substantially more chemicals. In fact, when

TABLE 2: Random Effects Model of the Impact of Absentee Management and other Factors on Log Emissions (Core Chemicals)

	1	2	3	4
Industrial inorganic chemicals	−.039[a]	−.038	−.030	−.032
	(.401)[b]	(.406)	(.410)	(.407)
Plastics	.090	.096	.103	.098
	(.386)	(.392)	(.395)	(.392)
Drugs	−.382	−.367	−.362	−.361
	(.539)	(.547)	(.552)	(.548)
Soaps and detergents	−1.283+	−1.278+	−1.281+	−1.276†
	(.452)	(.459)	(.463)	(.460)
Paints	.078	.072	.078	.078
	(.372)	(.378)	(.381)	(.378)
Industrial organic chemicals	.127	.132	.131	.131
	(.357)	(.362)	(.365)	(.363)
Agricultural chemicals	−.588	−.581	−.592	−.587
	(.546)	(.554)	(.559)	(.555)
Environmental expenditures	−10.101	−10.610	−10.316	−10.649
	(18.549)	(18.729)	(18.886)	(18.769)
Percent voted	−.358	−.820	−.690	−.751
	(2.708)	(2.769)	(2.790)	(2.773)
Percent poor	3.915	3.876	3.813	3.899
	(3.643)	(3.700)	(3.730)	(3.705)
Percent black	.163	.097	.116	.105
	(1.252)	(1.272)	(1.283)	(1.274)
Percent Hispanic	−.338	−.579	−.516	−.558
	(1.571)	(1.064)	(1.617)	(1.608)
Log chemicals on-site	.576**	.577**	.577**	.577**
	(.026)	(.027)	(.027)	(.027)

TABLE 2: Random Effects Model of the Impact of Absentee Management and other Factors on Log Emissions (Core Chemicals)

	1	2	3	4
Log firm size	.079*	.084*	.082*	.083*
	(.046)	(.047)	(.046)	(.045)
Log plant size	.380**	.366**	.371**	.368**
	(.102)	(.104)	(.105)	(.104)
Log associations	.111	.223	.138	.142
	(.281)	(.296)	(.289)	(.287)
Log churches	.256	.217	.315	.222
	(.391)	(.398)	(.403)	(.398)
Log third places	−.512	−.521	−.523	−.449
	(.411)	(.417)	(.421)	(.422)
Absentee managed plant	.023	.567	.848	.767
	(.031)	(.712)	(1.134)	(.954)
Absentee managed plant × Log associations		−.190*		
		(.106)		
Absentee managed plant × Log churches			−.215*	
			(.129)	
Absentee managed plant × Log third places				−.181*
				(.108)
Constant	.989	.912	.761	.810
	(1.726)	(1.752)	(1.771)	(1.756)
N	1736	1736	1736	1736
R^2	.640	.651	.649	.650

[a] Unstandardized regression coefficient
[b] Standard error

* $p < .05$ (one-tailed test) ** $p < .01$ (one-tailed test) † $p < .05$ (two-tailed test)

we take into account the amount of chemicals that plants have on-site and other factors that influence facilities' emissions, we discover that the environmental performance of absentee managed plants is no worse than that of other plants. Whether plants with distant headquarters emit more chemicals largely depends on the presence of local institutions that facilitate civic engagement. When embedded in communities with more associations,

TABLE 3: Random Effects Model of the Impact of Absentee Management and other Factors on Log Emissions (Expanded List of Chemicals)

	1	2	3	4
Industrial inorganic chemicals	.238[a]	.242	.244	.245
	(.196)[b]	(.195)	(.196)	(.195)
Plastics	.246	.256	.259	.257
	(.192)	(.191)	(.192)	(.191)
Drugs	−.181	−.174	−.171	−.171
	(.265)	(.266)	(.265)	(.266)
Soaps and detergents	−1.125†	−1.117†	−1.119†	−1.116†
	(.230)	(.230)	(.230)	(.231)
Paints	.325	.324	.327	.327
	(.188)	(.188)	(.187)	(.188)
Industrial organic chemicals	.278	.279	.277	.278
	(.178)	(.179)	(.179)	(.179)
Agricultural chemicals	−.181	−.174	−.187	−.179
	(.241)	(.239)	(.240)	(.240)
Environmental expenditures	−5.777	−5.837	-5.739	−6.042
	(9.264)	(9.259)	(9.260)	(9.263)
Percent voted	−1.038	−1.306	−1.255	−1.264
	(1.312)	(1.320)	(1.319)	(1.320)
Percent poor	3.924*	3.843*	3.800*	3.855*
	(1.770)	(1.770)	(1.771)	(1.770)
Percent black	.047	.042	.019	.016
	(.607)	(.607)	(.606)	(.607)
Percent Hispanic	−.833	−.939	−.916	−.926
	(.761)	(.762)	(.762)	(.763)
Log chemicals on-site	.599**	.600**	.599**	.600**
	(.012)	(.013)	(.013)	(.012)
Log firm size	.090**	.092**	.090**	.091**
	(.034)	(.034)	(.033)	(.035)
Log plant size	.361**	.353**	.355**	.356**
	(.049)	(.049)	(.049)	(.049)
Log associations	−.074	−.002	−.056	−.054
	(.137)	(.142)	(.139)	(.138)

TABLE 3: Random Effects Model of the Impact of Absentee Management and other Factors on Log Emissions (Expanded List of Chemicals) (Cont'd)

	1	2	3	4
Log churches	.192	.170	.239	.173
	(.191)	(.190)	(.191)	(.190)
Log third places	−.264	−.273	−.274	−.227
	(.199)	(.199)	(.198)	(.200)
Absentee managed plant	.037	.186	.467	.307
	(.147)	(.336)	(.532)	(.448)
Absentee managed plant × log associations		−.117*		
		(.063)		
Absentee managed plant × log churches			−.153*	
			(.091)	
Absentee managed plant × log third places				−.112*
				(.066)
Constant	1.097	1.022	.917	.971
	(.909)	(.906)	(.907)	(.906)
N	1859	1859	1859	1859
R^2	.656	.667	.666	.665

[a] Unstandardized regression coefficient
[b] Standard error

* $p < .05$ (one-tailed test) ** $p < .01$ (one-tailed test) +$p < .05$ (two-tailed test)

churches, and third places, absentee managed plants emit significantly fewer toxins.

Our findings are by no means the definitive word on absentee management and its interaction with community structures. Our analysis, for example, says nothing about the economic/environmental tradeoffs local communities sometimes make when deciding whether to recruit absentee managed plants. We have only considered absentee management as it manifests itself within the U.S. and therefore cannot say how absentee managed chemical plants might impact the environment in poorer nations. We also cannot conclude from this analysis that the racial and ethnic composition of neighborhoods is irrelevant to the emissions of absentee managed plants. Absentee management may interact with race and ethnicity in very significant and complicated ways that cannot be captured by our research design.[13]

In addition, we do not test (and thus cannot speak directly to) the mechanisms involved in the civic engagement of pollution. Hence, like with other studies on civil society (e.g., Tolbert et al. 1998), one can interpret the effects of civic engagement indicators in more than one way. In our case, it could be that certain local institutions (associations, churches, and third places) decrease the emissions of absentee managed plants because they instill in them a greater sense of *loyalty* to their social and physical surroundings. It may be that these institutions give citizens more opportunity to *voice* their grievances. Or absentee managed plants with high emission levels may tend to *exit* or avoid civically engaged communities (Hirshman 1972).[14] Until more detailed data become available, we have no way of determining which of these possibilities is more true.

These caveats notwithstanding, our study makes several significant contributions. First, its empirical analysis greatly improves on past studies by environmental and organizational sociologists that merely *speculate* about the pollution effects of absentee management. By combining EPA data on facilities' emissions with information on their host communities, we have empirically demonstrated for the first time that the spatial properties of plants have important environmental consequences and the local conditions under which this is especially true. Our study should also sensitize researchers to the need to study organizations where they most immediately impact the environment — the facility level.

Second, our findings inform work on globalization and the spatialization of capital. Prior research has noted how capital mobility can create new forms of locational concentration (Sassen 1991) or "sticky spaces in slippery space" (Markusen 1996). Our study compliments these studies by suggesting how local institutions help root absentee managed facilities in place and minimize their environmental destruction. Likewise, our research resonates with recent theorizing about the spatialization of the U.S. economy (Brady & Wallace 2000; Grant 1994) and the "spatial decentralization" of production (Romo & Schwartz 1995). But whereas this body of work stresses how footloose employers have severed their postwar accord with workers and citizens, our study suggests that a new accord may be possible that is grounded in social capital. This does not imply that a move toward a less capable and involved national government is required for civic engagement to thrive, as conservatives have suggested. Nor does it mean that translocal agents (e.g., NGOs, social movements, political parties) will not play a role in creating livable places (see Evans 1997; Putnam 1993). Rather, our results suggest that in the present global period, viable compromises between employers and workers/citizens might still be constructed at the local level. In light of the recent concerns raised about the relevance and efficacy of civic engagement (Portes 1998; Skocpol 1996:25), this is promising news for communities within the U.S.

Finally, and perhaps most importantly, our study demonstrates that if scholars are to study the impact organizations have on the environment (Perrow 1997), they must consider not simply the characteristics of businesses but those of other organizations with which businesses interact. As research on structural embeddedness and civil society suggests, communities are also strong organizations and how they cultivate the problem solving capacity of their citizens can strongly influence the behavior of external organizations like absentee managed plants. While our study cannot say whether more amicable or contentious strategies work best with absentee managers, it speaks to the more fundamental point that communities function as problem solving places. Indeed, although today's global economy is dominated by mobile employers, industry rarely is all-powerful. Communities possess organizational resources that can be activated to limit the destruction caused by businesses, including those with the least attachment to place.

Notes

1. Emissions, which are reported in pounds by the EPA, are weighted here by their toxicity (see Grant, Jones & Bergesen 2002 for details on toxicity weights).

2. In the context of this study, "out-of-state" is not meant as an indicator of globalization, but absentee management.

3. Unlike many other pollutants, which are subject to strict safety standards, the Environmental Protection Agency only requires manufacturers to report their toxic releases, leaving it up to local communities to act on that information as they see fit.

4. Examining emissions at the firm level would also introduce several complications, since firms may own plants in several industries with very different eco-organizational properties.

5. We explored the possibility of examining changes in emissions between 1990 and 2000, but several factors discouraged us from doing so. In particular, because of changes in reporting requirements and the fact that hundreds of new toxins have been added to the TRI list of chemicals since 1990, the facilities included in the 1990 and 2000 Toxics Release Inventory are often not the same. Indeed, a plant that processes the same chemical and in the same amount in these two years, may be required to report information on emissions for just one of these years. Importantly, we did replicate our 2000 analysis with 1990 data using the core list of chemicals and found the results to be basically the same. Hence, although the chemical plants included in the 1990 and 2000 Toxics Release Inventory may differ, the pattern of relationships between emissions and other factors appear robust across the two time points.

6. Grant et al.'s (2002) analysis of 1990 data tested the effect of branch plants in general and therefore did not isolate the pollution behavior of branches with out-of-state headquarters. By distinguishing absentee managed plants from others, we are able to test the thesis advanced by critics of globalization and capital migration that the *spatial* characteristics of plants have important environmental consequences.

7. A related study examines the emission rates of foreign owned plants in the U.S. (Grant & Jones 2004). It, however, focuses on a small subset of all absentee managed plants and with 1990 data that excludes roughly half of the industrial toxins now tracked by the EPA. Nor does it address the key question of this article, which is whether the environmental performance of absentee managed plants varies by the local civic cultures in which they are embedded. Hence, it examines the effects of absentee management in a very preliminary fashion.

8. The sources of these indicators are the Encyclopedia of Associations 2000 (Gale Research Corp. 2000), Census of Churches (Association of Statisticians of American Religious Bodies 2002), and the County Business Patterns (U.S. Bureau of the Census 2002).

9. We also considered the possibility that past environmental fines might influence emissions but discovered that because less than .005% of plants had ever been penalized, this factor could not be included in our models without creating severe problems of multi-collinearity.

10. In substantive terms, findings suggest that if there are no churches in a plant's county, the absentee effect is .467 ($b_x + [b_{xy}]Z$); if 10 churches, the effect is .115; if 50 churches, the effect is –.131; if 100 churches, the effect is -.238; and if 1000 churches, the absentee effect is –.590 (the sample range for churches is 2 to 4044). Results indicate that if there are no third places in a plant's county, the absentee effect is .307 ($b_x + [b_{xy}]Z$); if 10 third places, the effect is .049; if 50 third places, the effect is –.130; if 100 third places, the effect is –.209; and if 1000 third places, the absentee effect is –.467 (the sample range for third places is 0 to 12773).

11. Importantly, Tolbert et al. (1998) suggest that their indicators of civic engagement probably underestimate the importance of local institutions that are older and have especially deep roots in community.

12. We experimented with other specifications of the dependent variable such as expressing emissions as a fraction of all chemicals on-site (log[emissions/chemicals on-site]) and discovered that the results mirrored those for log emissions.

13. For example, if one were to estimate simultaneously the determinants of emissions, the siting of absentee-owned plants, and housing segregation (Hefland & Peyton 1999; see also Downey 2003), it might be found that race and ethnicity are significant predictors of emissions. However, the type of longitudinal data needed for such a simultaneous equation are unavailable or limited.

14. Although, to our knowledge, nowhere in the literature on industrial location has it been suggested or shown that civic engagement actually influences the siting of chemical facilities.

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APPENDIX: Correlations Between Key Independent Variables and Other Organizational and Sociodemographic Predictors

	Absentee Managed Plant	Log Associations	Log Churches	Log Third Places
Environmental expenditures	−.05	.07	.01	.03
Percent voted	.02	.08	−.12	−.01
Percent poor	.11	−.01	.10	.04
Percent black	.08	.13	.14	.16
Percent Hispanic	−.09	.36	.41	.41
Log chemicals on-site	.21	−.13	−.09	−.11
Log firm size	.57	−.09	−.09	−.10
Log plant size	.13	−.04	−.04	−.03