EFFECTS OF LOCAL LEGITIMACY ON CERTIFICATION DECISIONS TO GLOBAL AND NATIONAL CSR STANDARDS BY MULTINATIONAL SUBSIDIARIES AND DOMESTIC FIRMS

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ABSTRACT

We explore the impact of local legitimacy on the imitation of certification by subsidiaries of foreign multinational enterprises and domestic firms. We propose that MNE subsidiaries and domestic firms differ in their propensity to imitate geographically-proximate firms when deciding whether to adopt national versus global CSR certifications for two reasons. First, there are differences in the legitimacy they can expect to gain in different communities from adopting these certifications. Second, there are differences in their knowledge about the local legitimacy of these certifications. We test our hypotheses by studying the decisions of automotive suppliers in Mexico to certify either to ISO 14001, a global certification, or to Clean Industry, a national certification. We find that geography matters: MNE subsidiaries imitate national certifications by geographically-proximate firms to overcome a liability of foreignness, while domestic firms imitate global certifications by proximate firms to overcome the disadvantages of localness. We explore the implications of our findings for institutional theory and future research.

INTRODUCTION

The concept of local legitimacy has arisen in the international business literature to stress that "firms, in order to survive, need to comply with the rules and belief systems of the local stakeholder environment in which they operate" (Reimann, Ehrgott, Kaufmann, & Carter, 2012: 3; Hillman & Wan, 2005). At the same time, there is growing criticism of research in international business that has mostly assumed that countries are relatively homogeneous internally (Beugelsdijk, McCann, & Mudambi, 2010; Campbell, Eden, & Miller, 2012; Kostova & Roth, 2002). Accordingly, we explore the impact of local legitimacy on practice imitation by subsidiaries of foreign multinational enterprises (MNE subsidiaries) and domestic firms at a subnational level of analysis. We draw on recent literature that emphasizes that MNE subsidiaries not only face a liability of foreignness (Zaheer, 1995; Kostova & Zaheer, 1999), but that foreignness can also be an asset that provides MNE subsidiaries with advantages over domestic firms in specific areas (Joardar, Kostova, & Wu, 2014). In addition, domestic firms can experience a "liability of localness" (Perez-Batres & Eden, 2008; Un, 2015), which refers to "the added costs in doing business at home" (Jiang & Stening, 2012: 478). In the context of emerging economies, we refer to the disadvantages of localness because domestic firms often lack resources compared to their domestic counterparts in developed markets (Hitt et al., 2000) and may face significant changes in institutional frameworks due to economic reforms (Meyer, Mudambi, & Narula, 2011; Perez-Batres & Eden, 2008), not experienced by domestic firms in developed countries. We argue that MNE subsidiaries and domestic firms in emerging economies can overcome their respective challenges by adopting different practices and therefore differ in

their propensity to imitate the behavior of nearby firms when deciding to adopt different practices.

This paper seeks to develop a more complete theory of local mimetic isomorphism, i.e. firms' imitation of nearby firms' actions, by proposing that both MNE subsidiaries and domestic firms look to the adoption behavior of their local neighbors to identify whether practice adoption contributes to their legitimacy in the local environment. Our focus on the local level ties into an emerging stream within the field of institutional theory dealing with local, community isomorphism (Marquis, Glynn, & Davis, 2007). This literature suggests that standards of appropriateness regarding corporate social responsibility (CSR) practices, i.e. practices intended to increase social benefits or mitigate social problems for firm stakeholders, are embedded within local communities, which tend to benefit directly from firms' CSR-related practices such as improving environmental quality, paying fair wages, good working conditions, building schools and hospitals, and other local philanthropic practices. Indeed, this literature finds that firms often imitate other geographically-proximate firms in their local community when the legitimacy of a practice is uncertain (Greve, 1998), so that wide variations in CSR practices of firms in different regions in a single country may exist.

MNE subsidiaries and domestic firms in emerging economies are subject to contrasting expectations by local stakeholders given the liability of foreignness borne by the former and the disadvantages of localness of the latter. In terms of the liability of foreignness, MNE subsidiaries are often subject to higher expectations than domestic firms to engage in CSR practices such as supporting the local community and protecting the environment, especially in emerging economies (Gardberg & Fombrun, 2006; Kostova & Zaheer, 1999).

MNE subsidiaries may respond to these higher expectations by adopting CSR practices that demonstrate that they are good local citizens and that enhance their legitimacy in the local environment. Certifications to host-country environmental, social, or other CSR standards allow firms to demonstrate to outside observers that they have adopted specific, nationally-accepted CSR practices. Certifiable CSR standards specify CSR practices that firms need to implement and often require firms to pass an audit by a third-party auditor to obtain certification. Certifications to national host-country CSR standards are visible to local external stakeholders, who are likely familiar with and value these certifications. MNE subsidiaries may lack familiarity with the local environment and may be uncertain whether obtaining a specific national CSR certification enhances their local legitimacy. Institutional theory holds that in situations of high uncertainty, managers look to other firms in their organizational field for guidance on how to respond to external pressures and imitate their practices in order to establish or maintain legitimacy (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Scott, 1987). Because MNE subsidiaries can observe national CSR standard certification of their neighbors, we suggest that when deciding to obtain national CSR certifications, MNEs subsidiaries likely consider whether other nearby firms have obtained national certifications.

Domestic firms, however, likely gain fewer local legitimacy benefits from the certification to national CSR standards and are less likely to imitate their neighbors, because they are more familiar with these national certifications. Hence, we hypothesize that MNE subsidiaries are more likely than domestic firms to imitate certifications to national CSR standards by nearby firms.

In contrast, although a liability of localness also applies to developed-country firms (Un, 2015), domestic firms in an emerging economy are subject to specific disadvantages of localness if stakeholders perceive domestic firms to be inferior to MNE subsidiaries in certain areas such as product quality, manufacturing practices, CSR conduct, or environmental protection (Gardberg & Fombrun, 2006; Jiang & Stening, 2013). Country-of-origin studies in the international marketing literature have demonstrated that customers in emerging economies frequently perceive goods manufactured in developed countries as superior in quality to domestic products (Batra, et al., 2000; Han, 1989). Thus, domestic firms face the challenge of enhancing their legitimacy in the local environment by demonstrating to local stakeholders that their practices meet global environmental, social, quality, and other norms. Because domestic firms tend to be less familiar with global norms and standards than foreign MNE subsidiaries and may not know whether certification to a particular global standard enhances their local legitimacy, they likely consider whether nearby firms have obtained such certifications when making certification decisions. However, MNE subsidiaries are less likely to achieve local legitimacy benefits from certification to global standards because local stakeholders already expect these firms to meet these standards, so that global standard certifications do not confer additional legitimacy benefits on MNE subsidiaries. Thus, we hypothesize that domestic firms will be more likely than MNE subsidiaries to imitate nearby firms when obtaining global standard certifications.[1]

We empirically explore our hypotheses in the context of two CSR certifications that can be obtained by MNE subsidiaries and domestic firms in an emerging economy, Mexico,

[1] We generalize about domestic firms and foreign MNE subsidiaries for conceptual simplicity. We are aware that there is substantial heterogeneity among both sets of firms and make an effort to control for some of this heterogeneity in our empirical analysis. For example, we include controls for domestic (Mexican-based) MNEs because these firms may differ in their certification decisions from non-MNE domestic firms. We also control for the location of MNE subsidiaries' headquarters and whether firms export to regions that have adopted global standards such as ISO 14001 extensively.

for the years 2000 to 2003. We choose this research context for three reasons. First, firms' CSR certification decisions in Mexico were subject to high levels of uncertainty during our study period. Two relatively new competing CSR certifications existed in Mexico at the time – the International Organization for Standardization's ISO 14001 certification and the Mexican government's Clean Industry certification – and it was unclear whether either of these certifications would gain legitimacy. Further augmenting this uncertainty was the fact that the North American Free Trade Agreement opened the Mexican market to foreign competition in 1994 and changed domestic institutions and expectations for firm conduct. Second, the two certification programs differed in geographic scope – ISO 14001 is global in scope, while Clean Industry is a national Mexican certification – and thus in their likely effects on local legitimacy for MNE subsidiaries and domestic firms. Third, the practices that firms need to adopt to obtain the two CSR certifications are well-documented and explicit (Boiral, 2002), which minimizes the role of technical knowledge about practice implementation as a barrier to adoption of the practices prescribed by the certifications. Furthermore, it is not the mere adoption of the practices that provides legitimacy for firms, but it is the act of obtaining external certification of the adopted practices. By examining certification decisions of well documented practices, we are able to focus on the effect of local legitimacy on certification decisions and rule out other local processes that can contribute to local practice diffusion such as the local diffusion of technical knowledge about the practice.

Our results show that the local density of certifications among geographically-proximate firms, i.e. the ratio of certified to non-certified firms within a given small geographic distance, increases the likelihood of obtaining either certification for both

domestic firms and MNE subsidiaries. Consistent with our hypotheses, we find that the local density of the global CSR certification has a larger effect on certifications of domestic firms than MNE subsidiaries, whereas the local density of the national CSR certification has a larger effect on certifications of MNE subsidiaries than domestic firms. These findings provide theoretical extensions to the international business literature and to institutional theory by identifying conditions under which MNE subsidiaries and domestic firms are prone to imitate the actions of other firms in a local, sub-national context.

THEORY AND HYPOTHESES

The literature suggests two reasons why geographically proximate firms influence mimetic isomorphism. First, nearby firms are easier to observe (Greve, 1998); thus, they are more likely to be imitated, even when there is no communication between the actors (Bastos & Greve, 2003). The economic geography literature holds that as the density of firms adopting a new organizational practice within a given area increases, the likelihood of observing the practice is increased either through direct observation, face-to-face contact, or indirectly through other intermediaries such as local consultants, chambers of commerce, and employees who change employers (Jaffe, Trajtenberg & Henderson, 1993; Jaffe, Trajtenberg, & Fogarty, 2000; Rogers, 1995; Rosenkopf & Almeida, 2003; Smith & Grimm, 1991). Certifications of nearby firms can be discovered easily, either walking by certified facilities with the certification prominently displayed, talking to neighboring stakeholders at local lunch spots, or meeting at local industry events. The knowledge that neighboring firms have obtained a certification indicates to other firms that the certification is legitimate in the local environment, leading to mimetic isomorphism (Greve, 1998). Existing empirical research in institutional theory provides evidence that is consistent with the role of local mimetic

isomorphism (Galaskiewicz & Wasserman, 1989; Davis & Greve, 1997), but does not specifically consider the role of geographic proximity. Second, the density of geographically-proximate certified firms influences mimetic isomorphism because managers are more likely to regard the certifications obtained by proximate firms operating in the same environment as more appropriate and legitimate than the certifications obtained by distant firms with which they are not familiar (Haveman, 1993).

Certification to national CSR standards by MNE subsidiaries versus domestic firms

We expect that when deciding whether to obtain national certifications, the conduct of geographically-proximate firms will be more important for certification decisions of MNE subsidiaries than for those of domestic firms for two reasons associated with MNEs' liability of foreignness, which refers to all additional disadvantages a firm operating in a market overseas incurs that a local firm would not incur (Zaheer, 1995). First, adoption of national certifications may help MNE subsidiaries to overcome the liability of foreignness and demonstrate that they are good citizens. Second, the liability of foreignness leads MNE subsidiaries to experience greater uncertainty about the legitimacy of national certifications than domestic firms. Let us consider each argument.

First, MNE subsidiaries can reduce their liability of foreignness and increase their legitimacy in the local environment by adopting CSR practices that are accepted in and benefit local communities such as environmental protection, paying fair wages, improving working conditions, building schools and hospitals, and other local philanthropic activities (Campbell et al., 2012; Gardberg & Fombrun, 2006; Kostova, Roth, & Dacin, 2008). Local stakeholders such as governments, local NGOs, and local communities, are likely familiar with and value national CSR certifications. Thus, MNE subsidiaries' certification to national

CSR standards, which are not required by law, but are viewed as desirable by local stakeholders, will likely increase subsidiaries' local legitimacy because their adoption demonstrates that the MNE subsidiary is making efforts to comply with or even exceed local norms of conduct. An increase in the proportion of adopters to non-adopters of a practice in the local environment increases the local legitimacy of the practices (Haveman, 1993) and thus contributes to establishing local standards. Because MNE subsidiaries can expect to gain greater local legitimacy benefits from obtaining national standard certifications than domestic firms that are embedded in the local context (Meyer et al., 2011), MNE subsidiaries are more likely to pay attention to local conduct regarding national certifications, and thus imitate national CSR certifications of nearby firms.

Second, MNE subsidiaries are likely less knowledgeable than domestic firms about the local legitimacy of certification to national standards (Eden & Miller, 2004; Hymer, 1976; Lamin & Livanis, 2013) and thus face higher levels of uncertainty about the legitimacy of such certifications (Milliken, 1987). Given that MNE subsidiaries are subject to both home-country and host-country norms, and thus operate in a very complex institutional environment with considerable discretion to adopt national certifications (Kostova et al., 2008), they likely look to other firms for guidance about practices that affect their local legitimacy (Rosenzweig & Singh, 1991), such as CSR-related practices. Because MNE subsidiaries can undertake a wide range of CSR practices that provide different economic, social and/or environmental benefits to local communities, they tend to take cues from their local environment to determine which local CSR practices are perceived as most legitimate in the local context. This higher uncertainty likely increases mimetic isomorphism, so that MNE

subsidiaries are more likely that domestic firms to imitate the behavior of nearby firms regarding national certifications.

As a result of the benefits that national CSR certifications provide in reducing MNE subsidiaries' local liability of foreignness and the greater uncertainty about the local legitimacy of national CSR certifications, MNE subsidiaries likely imitate national certifications of nearby firms. Therefore, we hypothesize:

Hypothesis 1: For national CSR certifications, the density of geographically-proximate certified firms has a larger effect on MNE subsidiaries' certification decisions than on certification decisions of domestic firms.

Certification to global CSR standards by MNE subsidiaries versus domestic firms

For global certifications, we expect domestic firms to pay more attention to the density of geographically-proximate prior certifiers than MNE subsidiaries for two reasons associated with the disadvantages of localness that domestic firms in emerging economies experience. First, local stakeholders often perceive domestic firms to be less legitimate than MNE subsidiaries in certain aspects (Jiang & Stening, 2013), which leads to higher local legitimacy benefits of global certifications for domestic firms than for MNE subsidiaries. Second, because of the disadvantage of localness resulting from changes in their institutional context (Perez-Batres & Eden, 2008), domestic firms in emerging economies face higher information asymmetries with respect to global trends and greater uncertainty about the legitimacy of global certifications compared to their foreign MNE counterparts (Oetzel & Doh, 2009). Let us examine each reason more closely.

First, the increase in legitimacy in the local environment gained by certifying to a global standard is likely greater for domestic firms than for foreign MNE subsidiaries. Global

standards are viewed as global benchmarks for best practice (Nadvi, 2008; Uzumeri, 1997) and thus global standard certifications signal to external stakeholders that a firm meets global norms. In emerging economies, MNE subsidiaries are seen as more legitimate in some ways than domestic firms because they are perceived to meet global norms in terms of product quality and enjoy a better brand reputation (Batra, el al., 2000; Han, 1989; Oetzel & Doh, 2009; Sethi & Judge, 2009). MNE subsidiaries are also perceived to have superior CSR, health and safety, and environmental practices than domestic firms (Gardberg & Fombrun, 2006). Given the superior CSR conduct attributed to foreign MNE subsidiaries, they will experience fewer legitimacy benefits in local host-country communities from global CSR certifications than domestic firms because local stakeholders already expect MNE subsidiaries to meet global standards.

In contrast, domestic firms can demonstrate that they meet global benchmarks by obtaining global standard certifications, which can increase their legitimacy in the local environment. In fact, domestic firms are often subject to local pressures to obtain global certifications in order "to follow the best practices within their industrial groups" (Zhu, Cordeiro, & Sarkis, 2012: 147). Local legitimacy benefits are likely to be most prevalent for global standards that directly benefit local communities such as CSR practices (Marquis et al., 2007). As the density of practice adopters increases in the local environment, the local legitimacy of the practice increases as well (Haveman, 1993). Domestic firms are more likely than MNE subsidiaries to pay attention to increases in global CSR standard certifications by firms in their local environment and imitate these firms because they can expect to gain greater local legitimacy benefits from global standard certifications.

Second, domestic firms in emerging economies face disadvantages of localness "due to pressures to conform to new cognitive, normative, and regulatory structures (i.e., the forming of new institutions)" (Perez-Batres & Eden, 2008: 236). Domestic firms in emerging economies often experience significant changes in their institutional context, such as trade and other economic liberalization, resulting in greater exposure to foreign competition and institutional influences from abroad, such as global certifications. Because of their relative isolation, domestic firms incur disadvantages and costs not incurred by MNE subsidiaries (Jiang & Stening, 2013; Nachum, 2010), which are embedded in multiple contexts and allow the MNE to access and exploit knowledge about the legitimacy of global CSR practices (Meyer et al., 2011). For example, domestic firms likely have less knowledge about the legitimacy of global certifications (Vogel, 2010). An exception are domestic firms with foreign operations that do not incur these disadvantages and have been found to be more similar to MNE subsidiaries (Awate, Larsen, & Mudambi, 2012; Nachum, 2010). Given that they operate outside their home country Mexico and are subject to foreign expectations, they tend to be more like multinational subsidiaries than domestic firms with respect to international certifications.

Informational disadvantages faced by domestic firms in emerging economies contribute to local mimetic isomorphism. Domestic firms can obtain various global CSR certifications to demonstrate to local stakeholders that they meet global CSR benchmarks. These global certifications and standards address a range of CSR-related issues such as environmental protection (e.g., ISO 14001, the EMAS Eco-Management and Audit Scheme), working conditions and fair wages (e.g., SA 8000, Fair Trade), stakeholder engagement (e.g., AA1000) or multiple CSR issues (e.g., UN Global Compact). Because domestic firms are

less familiar with global CSR trends than MNE subsidiaries, they face more uncertainty regarding the current and future local legitimacy benefits of different global certifications than their MNE counterparts (Oetzel & Doh, 2009). Furthermore, searching for and evaluating distant information is costly for domestic firms that have limited financial resources to compete internationally (Hitt, et al., 2000; Wright, Filatotchev, Hoskisson, & Peng, 2005). By taking cues from nearby competitors as to the legitimacy of global certifications, domestic firms reduce search costs (Rosenkopf & Almeida, 2003). Domestic firms more likely notice global standard certifications by nearby firms than by distant firms because this local information is more easily accessible to the domestic firm and thus, less costly.

The legitimacy benefits in the local environment that domestic firms can gain from global CSR standard certification combined with the greater uncertainty about the local legitimacy of global certifications leads them to imitate global standard certification by geographically-close, prior adopters. Thus, we hypothesize:

Hypothesis 2: For global CSR certifications, the density of geographically-proximate certified firms has a larger effect on domestic firms' certification decisions than on certification decisions of MNE subsidiaries.

RESEARCH SETTING, DATA AND METHOD

We test our hypotheses in the context of domestic and foreign automotive suppliers located in Mexico in the early 2000s. This period represents one of significant change for Mexico after having joined the North American Free Trade Agreement in 1994, which opened the doors to foreign competition. One of the most affected industries was the Mexican automotive supply industry, which generated $74 billion in revenues in 2013 and

was fifth largest in the world among auto-parts exporting nations (INA, 2013). During our study period (2000-2003), firms in this industry faced the issue of whether to obtain certification to two relatively recent, but different CSR standards that both established rules and practices for the environmental conduct of firms: a national certification, Clean Industry, and a global certification, ISO 14001 (Henriques, Husted & Montiel, 2013).

Clean Industry (CIL) is a voluntary environmental CSR certification established by the Mexican environmental agency (PROFEPA) . Facilities can apply to join this national program and obtain certification once compliance with all applicable regulations is demonstrated. Because the Mexican environmental agency lacks financial, technical, and human resources to effectively monitor and enforce Mexican environmental regulations (Behre, 2003), one of the main goals of Clean Industry is to provide incentives for firms to proactively comply with environmental regulations. The first Clean Industry certifications were granted in 1998.

ISO 14001 is a voluntary global CSR certification established in 1996 that specifies requirements for an Environmental Management System (EMS). EMSs consist of a set of environmental goals, environmental policies, and procedures for improving environmental performance (Coglianese & Nash, 2001). Facilities obtain ISO 14001 certification by having an independent ISO-accredited auditor certify that their EMS is ISO 14001 compliant. The first Mexican ISO 14001 certifications were granted in 1999.

Sample and Data

To test our hypotheses we assembled a dataset of 1,804 facility-year observations from 451 different Mexican auto-supplier plants for a four-year time period. Data for our

dependent variables covers the years 2000 to 2003.[2] We lagged our independent local density variables by one year (1999 to 2002). Facility data were derived primarily from the ELM Guide Automotive Supplier Database, which includes information for approximately 80% of all automotive suppliers operating in Mexico. This database contained data for 472 plants of which 458 had data for all four years in our sample period. Incomplete data for some of our control variables reduced our sample size to 451 plants. We obtained a list of Clean Industry certified facilities from the PROFEPA website and identified the ISO 14001 certified facilities from WorldPreferred database of ISO 14001 certified facilities (WorldPreferred 2004). Out of 451 facilities, 15 plants were Clean Industry certified and only two were certified with ISO 14001 before 2000. From 2000-2003, 51 (11%) were Clean Industry certified and 85 (18%) were ISO 14001 certified. Hence, most certifications happened during the study period.

Variables

Certification. Because we use an event history model (Cox Hazard model) to test our hypotheses, our dependent variable is specified in two parts: (i) the time elapsed in years between the first certification in the Mexican automotive industry and the certification of the focal firm, and (ii) a binary variable that equals one when the certification event occurred and zero otherwise (Allison, 1984).

Local density. To measure the density of certification by geographically-proximate firms, we mapped all 451 facilities that had four years of data in the ELM database using Google Maps and ArcGIS 10.0. Following Dai, Eden and Beamish (2013), we first used facilities' address, city and postal code to identify their location (latitude and longitude) in

[2] We choose this time period because both certifications were relatively new during this window and because ISO 14001 certification data for Mexico is only available until 2003. Our data source, the Worldpreferred Directory ceased to compile ISO 14001 certification information after that year.

Google Maps. Next, we identified all certified and non-certified automotive suppliers within a 5km radius of the focal facility (using the buffer tool from the geo-processing menu).[3] Finally, local certification density variables (*Clean Industry Density* and *ISO Density)* for each facility-year were calculated as the ratio of the number of certified facilities relative to the total number of facilities in the 5km buffer area for both certifications. In addition, we calculated the density of certification for the area between 5 and 10km to control for the density of certifications in the immediate distance beyond 5 km.

MNE-density interaction terms. We used interaction terms to test our two hypotheses. We first created the dummy variable *MNE* that equals one for MNE subsidiaries and zero otherwise. We then multiplied *MNE* with the two density measures.

Control Variables. Appendix 1 describes the control variables included in our model. Table 1 shows the correlations among all the variables.

Estimated Model

The decisions to obtain Clean Industry and ISO 14001 certification are not mutually exclusive. Firms can obtain Clean Industry, ISO 14001 or both certifications; therefore, we have two response variables (Clean Industry and ISO 14001). Because 85 percent of adopting firms only adopt one of the two certifications in our sample, the joint decision is not a

[3] We selected five kilometers as the buffer distance, because direct observation and interaction with neighboring facilities is likely within this radius. We contacted 30 plants and asked about the typical distance to neighboring facilities they usually interacted with. The mode distance reported was 5km. Also, in previous studies analyzing interactions between neighboring plants, 5km was the most commonly applied distance (Baldwin et al., 2010; Wallsten, 2001). Within this distance, firms were more likely to meet with each other in social events (community meetings, local industry organizations or even share meals/drinks in the neighborhood). They were also more likely to observe neighbors' behavior (e.g., see a sign on a neighboring plant advertising its Clean Industry or ISO 14001 certification).

significant factor in our modeling.[4] We used Cox proportional hazard models which allow us to examine the time-invariant covariate effects on the cause-specific hazard function for each type of failure.[5] In our case, failure translates to certification to one of the standards. Previous studies analyzing ISO 14001 certification used the same duration model to understand firms' decisions to certify (Nakamura, Takahashi, & Vertisky, 2001). One-tailed testing is used since our hypotheses are directional (Cho & Abe, 2012).

Following previous studies of practice adoption that used longitudinal datasets (e.g., Townsend Yeniyurt, & Talay, 2009), after a facility obtained either Clean Industry or ISO 14001certification, we removed it from the respective dataset for subsequent years because the facility was making a certification decision only in the year it obtained certification and subsequently remained certified. We did not have any facilities in our sample that lost certification in our study period. We also did not include those plants that certified prior to 2000 in the datasets for our Clean Industry and ISO 14001 models (2 and 15 plants, respectively). These adjustments resulted in 1,699 facility-year observations for our Clean Industry model and 1,705 facility-year observations for our ISO 14001 model.

Tables 1 and 2 here

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[4] To confirm that certification to the two programs are not interdependent, we calculated the rho for the probit models and found that the rho is not significant ($\chi 2=0.051$, $p>0.82$), indicating that the two programs, ISO 14001 and Clean Industry, are not interdependent.

[5] In Cox Proportional Hazard models no assumptions are made about the form of the baseline hazard, but a test of proportionality needs to be assessed before the model results can be safety applied. We perform such tests of proportionality in all the models and find no evidence to contradict the proportionality assumption.

RESULTS

We report our results for the Clean Industry models (Models 1 to 4) in Table 2 and for the ISO 14001 models (Models 5 to 8) in Table 3.[6] Models 1 and 5 do not include the interaction terms and show that the density of certified firms within 5km has a positive and significant impact on both Clean Industry and ISO 14001 certification. Furthermore, the strength of this influence becomes insignificant when certified neighbors are more distant (between 5-10km) from the focal firm.

Hypothesis 1 suggests that for national CSR certifications the impact of local density of prior certifiers on certification decisions is larger for MNE subsidiaries than for domestic firms. For the national Clean Industry certification in Model 2, the MNE-density interaction term is positive and significant (p=0.05), supporting our prediction. Additionally, we report separate models for MNE subsidiaries (Model 3) and domestic firms (Model 4). For MNE subsidiaries, *CIL local density* is positive and significant ($\beta = 3.14$, $p < 0.01$). For domestic firms, *CIL local density* is positive and significant ($\beta = 1.69$, $p<0.01$). The coefficient for MNE subsidiaries is greater than the coefficient for domestic firms, which is consistent with the results in Model 2.Based on the hazard ratios, the chance of *CIL local density* affecting certification among MNE subsidiaries is five times higher than the chance of affecting domestic firms.

Hypothesis 2 suggests that for global CSR certifications the impact of local density of prior certifiers on certification decisions is larger for domestic firms than for MNE subsidiaries. The MNE-density interaction term in Model 6 shows a significant, negative

[6] Before proceeding with the regression analyses and due to the use of geographical data we need to ensure that we do not have problems of spatial autocorrelation, that is, that firms with similar characteristics are not clustered together in space (Doh & Hahn, 2008). We calculated *Moran's I index* which indicated that no problems of spatial autocorrelation exist in our data. For the ISO 14001 certification the z-test was -0.067 (p-value=0.473) and for the Clean Industry certification the z-test was 1.250 (p-value=0.102).

result (p=0.006), which indicates that the effect is larger for domestic firms and thus supports our prediction for the global ISO 14001 certification. Again, we report separate models for MNE subsidiaries (Model 7) and domestic firms (Model 8). For MNE subsidiaries, ISO local density 5 km is positive and significant ($\beta = 3.13$, $p<0.01$) and similarly for domestic firms ($\beta = 14.58$, $p<0.01$). The coefficient for domestic firms is greater than the coefficient for MNEs, which is consistent with the results in Model 6. Based on the hazard ratios, the chance of *ISO local density* affecting certification among domestic firms is 94 higher than the chance of affecting MNE subsidiaries.

The interpretation of the magnitude of the interaction effect is particularly challenging in non-linear models (Zelner, 2009). To aid interpretation, we follow Barthel and Royston (2006) by calculating the hazard ratio for our models. The hazard ratio consists of the ratio of hazard rates for two levels of the independent variable. In our case, it indicates the chance that ISO density affects an MNE subsidiary compared to a domestic firm. The hazard ratio is 0.220 and significant, which means that the chance of ISO density affecting an MNE subsidiary is about one fifth the chance that it will affect a domestic firm. In the case of Clean Industry, the hazard ratio for the interaction is 5.058 and significant. Here the chance of CIL density affecting adoption by an MNE subsidiary is about five times the chance of it affecting a domestic firm.

Further Data Analysis

We conducted two tests to explore alternative explanations. Firm profitability may be a major determinant of certification decisions because better performing firms have more resources to invest in obtaining certifications. Because financial data were not publicly available for all parent companies of our sample facilities, we examined the effect of

profitability for the 51 facilities of publicly-traded, US-headquartered parent companies for which corporate return on assets (ROA) data for the years 2000 to 2004 were available from Compustat. We ran our models with this reduced sample, including ROA as a control variable, and found no evidence that the most profitable US companies were more likely to certify their Mexican facilities.[7]

We also tested whether locally embedded MNE subsidiaries may behave more like domestic firms than non-embedded subsidiaries.[8] We operationalized embeddedness of MNE subsidiaries as plant age (years of operation in Mexico), location in an industrial park, and also by Japanese headquarters, given that Japanese subsidiaries tend to use expatriate Japanese managers rather than local managers (Kopp, 1994; Brock) and are likely less embedded. We found no evidence that embedded MNE subsidiaries differ from non-embedded MNE subsidiaries in their certification behavior.

DISCUSSION AND CONCLUSION

Our study suggested that MNE subsidiaries and domestic firms face different types of liabilities in the local environment, and thus can expect to gain local legitimacy from certification to different types of CSR standards – national versus global standards. Accordingly, we suggest that MNE subsidiaries and domestic firms differ in their propensity to imitate the behavior of nearby firms when making decisions to adopt these different certifications. We empirically explored this issue in the context of national and global CSR certification decisions of Mexican automotive suppliers.

[7] In 2001, the average return on assets (ROA) for US companies with ISO 14001 certified Mexican facilities was 6.92, 8.92 for US companies with Clean Industry certifications and 8.72 for US companies with non-certified Mexican facilities. T-tests do not show significant differences between the three groups of companies.

[8] We would like to thank the area editor for suggesting that we look at embeddedness.

We found that for the national CSR certification, the effect of the density of geographically-proximate prior adopters on adoption decisions was stronger for MNE subsidiaries than for domestic firms. This finding supports our argument that MNE subsidiaries can overcome the liability of foreignness they face in the local environment by certifying to national standards that benefit local communities and that they look to their local competitors to identify the certifications that are most legitimate locally. In contrast, we found that for the global CSR certification, the density of nearby prior adopters had a stronger effect on domestic firms' adoption decisions than on decisions of MNE subsidiaries. This finding supports our argument that domestic firms in an emerging economy can overcome their disadvantages of localness arising from the perception that they have inferior practices relative to MNE subsidiaries by obtaining global certifications and that they take cues from their nearby competitors as to the legitimacy of the global certification in the local environment.

This study makes five contributions to the literature. First, we build on the literature on the liabilities of foreignness and disadvantages of localness to explore how MNE subsidiaries and domestic firms in an emerging economy overcome their respective challenges and gain legitimacy at the local level. Our results suggest that certifications that have similar direct effects on local communities – protection of the local natural environment – but differ in their geographic scope – national versus global – differ in their local legitimacy for MNE subsidiaries and domestic firms, which leads to differences in isomorphic behavior among these groups of firms.

Our findings are somewhat at odds with the suggestion that MNE subsidiaries face "institutional freedom" (Kostova, et al., 2008) because the diverse institutional pressures that

MNE subsidiaries face at various geographic levels provides them more discretion on how to respond to institutional influences. In particular, it has been suggested that MNE subsidiaries rarely face pressures for local isomorphism in host countries because they "bring something distinctive to their host countries that is valued and appreciated by local constituents" so that "it is less likely they will be expected to adopt locally established practices" (Kostova et al., 2008: 999). Our findings suggest that with respect to practices that directly affect local communities, such as environmental protection practices, MNE subsidiaries do respond to local pressures and show isomorphic behavior with respect to national environmental certifications, which are a locally established practice. This suggests that MNE subsidiaries do respond to local pressures and exhibit local isomorphism when adopting locally established practices if these practices directly benefit local communities. Adopting such practices demonstrates that they are good local citizens and helps them overcome liabilities of foreignness at the local level.

Second, we bring geography more explicitly into institutional theory. While most institutional-based studies of the antecedents of practice adoption have not explicitly considered the geographic scope of institutional pressures, we focus on the effect of local context (Meyer et al., 2011). This study not only reinforces recent work on the role of local context and community isomorphism, but also extends it by specifically looking at mimetic isomorphism within the very small radii of five and ten kilometers, which often represents a much smaller area than a city per se.[9] Further research on the effect of other local factors that affect mimetic pressures, e.g. local industry associations and local government pressures, should more explicitly analyze the geographic distance at which different local forces matter.

[9] For example, the surface area of the Monterrey Metropolitan Area is 5,346 km^2. The area of a circle with a radius of 5 km is only 78.54 km^2. So we are looking at much more micro and local influences than even at the community level.

Third, we draw attention to the fact that the geographic scope of the legitimacy gained by adopting a certification affects adoption decisions. We specifically focus on the local legitimacy that different types of firms can expect to gain from adopting different certifications. Studies of the adoption and diffusion of global practices or standards (Christmann & Taylor, 2001; Corbett & Kirsch, 2001; Guler, Guillen & Macpherson, 2002) have identified influences from abroad such as trade, exports, sales to foreign customers, or foreign ownership as antecedents of certification. This focus stems from the interest of these studies on global legitimacy, i.e. the legitimacy beyond national borders that firms can expect to gain from adopting global practices. In contrast, we argue that global certifications are viewed as global benchmarks of best practices and hence provide legitimacy in the local environment for domestic firms that can demonstrate that they meet global benchmarks by adopting global practices. Therefore, adoptions of global certifications by nearby firms contribute to a local diffusion process among domestic firms. Overall, our findings show that the local legitimacy of certifications leads to local mimetic processes.

Fourth, our study suggests that local practice diffusion processes differ between MNE subsidiaries and domestic firms. We show that for different practices the effect of local density of prior adopters on certification decisions differs for MNE subsidiaries and domestic firms. Thus, it is important to distinguish between different types of firms when studying local diffusion processes and to explicitly consider how these firms may differ in the uncertainty they face about the legitimacy of the certification and how the local legitimacy they gain from certifying may differ. Further research should explore how the diffusion processes and adoption decisions for other practices differ for MNE subsidiaries and

domestic firms and identify other variables that contribute to differences in diffusion processes.

Fifth, our study demonstrates the relevance of subnational variation for the diffusion of certifications among MNE subsidiaries. The local density of geographically-proximate adopters influences adoption among MNE subsidiaries and the strength of this influence decreases as adopters become more distant from the focal firm. Hence, international business studies need to look carefully at local contexts and subnational variations in addition to their traditional focus on national contexts (Meyer, et al., 2011).

Our study is not without limitations. First, some may argue that business in Mexico is not entirely representative of business in other emerging economies. Nevertheless, Mexico provides a unique research setting because of the existence of two similar certifications that differ in geographic scope and origin. In addition, Mexico is similar to of many other emerging economies where domestic firms face uncertainties resulting from economic liberalization, which increases international competition and new institutional requirements from abroad such as CSR certifications. As in other emerging economies, a lack of resources forces many Mexican firms to limit their search for information to the local environment more than their counterparts in more advanced economies. Second, the study is limited to a single industry, automotive suppliers. MNE subsidiaries are relatively homogeneous in this sector with respect to their relationship to their parent company and compliance with its mandates (Doner, Noble, & Ravenhill, 2006). Such homogeneity may not characterize other industries. Although it would be useful to extend this study to other industries in the future, the focus on a single industry does allow us to control for differences in certification behavior across

industries. Third, we only study the early stage of certification for the two standards, which results in a limited number of adopters.

Despite these limitations, the study provides an important initial test of the impact of the local legitimacy gained from certifications and local density of nearby certifications on certification decisions by MNE subsidiaries and domestic firms. Future research should replicate these results in other countries at different stages of development by exploring the role of institutional systems (McDermott & Corredoira, 2010) and social networks (Giuliani, 2007; Lorenzen & Mudambi, 2013) in the diffusion of certifications among MNE subsidiaries in a subnational context. Regardless of these still unanswered questions, this study makes an important contribution to scholarly inquiry into the local geographic diffusion of management practices among MNE subsidiaries and domestic firms within the framework of institutional theory and calls upon international business researchers to take seriously variation in subnational contexts in the study of MNE subsidiaries.

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TABLE 1. Descriptive Statistics and Correlations

	Variable	*Mean*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
1	ISO 14001	0.05	0.21	1												
2	Clean Industry	0.02	0.14	-0.01	1											
3	ISO local density 5km	0.07	0.14	0.29	0.00	1										
4	ISO local density 5 to 10km	0.11	0.25	0.01	0.02	0.08	1									
5	CIL local density 5km	0.05	0.14	0.00	0.14	0.14	-0.01	1								
6	CIL local density 5 to 10km	0.10	0.33	0.01	0.01	-0.00	0.38	0.00	1							
7	MNE subsidiary	0.68	0.46	0.10	-0.02	0.08	-0.01	0.02	0.02	1						
8	Mexican MNE	0.02	0.15	0.05	0.09	0.03	-0.03	0.01	0.04	-0.17	1					
9	Plant age	23.04	21.28	-0.03	-0.02	-0.01	0.01	-0.02	0.00	-0.28	0.20	1				
10	Industrial park plant	0.48	0.54	0.01	0.02	0.03	-0.05	0.02	-0.02	0.13	-0.02	-0.06	1			
11	Sub-assembler plant	0.61	0.48	0.05	0.00	0.09	-0.03	0.00	-0.05	0.22	-0.00	0.00	0.06	1		
12	Border city plant	0.22	0.41	-0.00	-0.01	0.06	0.05	0.10	0.09	0.32	0.02	0.01	0.06	0.21	1	
13	Exports to high ISO pressure region	0.41	0.49	0.04	0.05	0.03	-0.01	0.05	-0.01	0.25	-0.10	-0.18	0.06	0.07	0.09	1
14	QS 9000	0.34	0.47	0.04	0.04	0.05	-0.02	0.03	0.02	0.10	0.16	-0.01	-0.00	0.02	0.05	-0.01
15	Headquarters in Japan	0.12	0.32	-0.02	-0.03	-0.00	0.03	-0.01	0.10	0.25	-0.04	-0.15	0.01	0.17	0.13	0.07
16	Headquarters in Europe	0.06	0.24	0.03	0.02	-0.01	-0.06	-0.01	-0.01	0.18	-0.01	-0.10	0.09	0.09	-0.01	0.03
17	Size	5.75	1.19	0.04	0.06	0.03	0.05	0.05	0.04	0.28	0.07	-0.00	-0.01	0.24	0.29	0.08
18	Tier I	0.79	0.40	0.01	0.01	-000	-0.02	-0.05	0.01	0.20	-0.05	-0.19	0.05	0.13	0.12	0.13
19	State GDP per capita	8.69	0.56	-0.00	0.01	0.03	0.08	0.04	0.03	-0.03	0.05	0.05	-0.07	-0.03	0.16	-0.05
20	State inspection intensity	0.58	0.05	0.01	0.02	-0.01	-0.00	-0.04	-0.08	0.17	0.11	-0.07	-0.02	0.05	0.05	0.12
21	Total ISO certified plants	51.55	31.31	0.09	0.02	0.20	0.22	0.01	0.02	-0.01	0.00	0.04	-0.01	-0.01	0.00	-0.01
22	Total CIL certified plants	35.86	8.42	0.08	0.02	0.29	0.21	0.01	0.03	-0.01	0.00	0.04	-0.01	-0.01	0.00	-0.01

	Variable	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*
14	QS 9000	1							
15	Headquarters in Japan	0.00	1						
16	Headquarters in Europe	0.02	-0.09	1					
17	Size	0.16	0.19	-0.03	1				
18	Tier I	0.05	0.08	0.03	0.08	1			
19	State GDP per capita	0.02	0.13	-0.05	0.05	-0.05	1		
20	State inspection intensity	0.04	0.10	-0.03	0.04	0.09	0.26	1	
21	Total ISO certified plants	-0.06	-0.00	-0.00	0.01	-0.00	0.00	-0.07	1
22	Total CIL certified plants	-0.05	0.00	-0.01	0.01	-0.01	0.00	-0.06	0.98

N=1,804 facility-year observations, except for correlations with ISO 14001 (1,705 facility year observations) and Clean Industry (1,699 facility-year observations)
Correlations with an absolute value greater than 0.12 are significant at the 5% level.

TABLE 2. Cox Hazard Function Regression Results for Clean Industry certification

VARIABLES	Controls Model 1	Full Model 2	MNE subsidiaries Model 3	Domestic Model 4
CIL local density 5km	1.861***	1.573***	3.144***	1.694***
	(0.399)	(0.473)	(0.858)	(0.586)
CIL local density 5km x MNE subsidiary		1.621**		
		(0.991)		
CIL local density 5 to 10km	0.295	0.303	0.205	0.766
	(0.313)	(0.331)	(0.412)	(0.666)
MNE subsidiary	-0.535	-0.800		
	(0.469)	(0.502)		
Mexican MNE	1.397**	1.352**		
	(0.668)	(0.670)		
Plant age	-0.009	-0.009	-0.0089	-0.011
	(0.009)	(0.010)	(0.013)	(0.016)
Industrial park plant	0.372**	0.357	0.799**	0.210
	(0.224)	(0.228)	(0.459)	(0.484)
Sub-assembler plant	0.0245	0.0945	0.236	-0.053
	(0.371)	(0.372)	(0.497)	(0.631)
Border city plant	-0.314	-0.380	-0.718	1.009
	(0.465)	(0.468)	(0.513)	(1.185)
Exports to a high ISO pressure region	0.511	0.570	0.565	0.873
	(0.375)	(0.376)	(0.450)	(0.656)
QS 9000	0.408	0.346	0.185	1.042
	(0.361)	(0.363)	(0.433)	(0.634)
Headquarters in Japan	-1.003	-0.963		
	(0.780)	(0.775)		
Headquarters in Europe	0.566	0.654		
	(0.564)	(0.569)		
Size	0.329**	0.352**	0.397**	0.201
	(0.168)	(0.170)	(0.218)	(0.293)
Tier 1	0.532	0.381	1.129	-0.169
	(0.539)	(0.524)	(1.035)	(0.701)
State GDP per capita	0.0356	0.0208	0.300	-1.004
	(0.334)	(0.337)	(0.433)	(0.816)
State inspection intensity	3.649	4.077	2.720	9.222
	(3.237)	(3.223)	(4.361)	(5.654)
Total CIL certified plants	0.023	0.021	0.0024	0.051
	(0.019)	(0.019)	(0.024)	(0.032)
LR- Chi squared	42.21***	44.60***	22.97**	22.14**
Observations	1,699	1,699	1,166	533

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.10 for one-tailed test.

TABLE 3. Cox Hazard Function Regression Results for ISO 14001 certification

VARIABLES	Controls Model 5	Full Model 6	MNE subsidiaries Model 7	Domestic Model 8
ISO local density 5km	3.097***	6.763***	3.127***	14.580***
	(0.375)	(1.505)	(0.402)	(4.451)
ISO local density5km x MNE subsidiary		-3.816***		
		(1.541)		
ISO local density 5 to 10 km	-0.165	-0.105	-0.270	-1.430
	(0.498)	(0.496)	(0.521)	(2.609)
MNE subsidiary	1.515***	2.194***		
	(0.408)	(0.563)		
Mexican MNE	1.816***	1.851***		
	(0.550)	(0.551)		
Plant age	-0.004	-0.004	-0.000	-0.118***
	(0.006)	(0.005)	(0.005)	(0.056)
Industrial park plant	-0.005	-0.014	-0.158	0.744
	(0.227)	(0.229)	(0.241)	(0.707)
Sub-assembler plant	0.199	0.191	-0.0922	1.970
	(0.268)	(0.268)	(0.276)	(1.481)
Border city plant	-0.390	-0.376	-0.308	-41.21
	(0.288)	(0.289)	(0.290)	(0)
Exports to a high ISO pressure region	-0.0878	-0.0850	0.0362	-51.64
	(0.243)	(0.243)	(0.247)	(7.496)
QS 9000	0.121	0.115	0.0667	-0.559
	(0.234)	(0.233)	(0.244)	(1.181)
Headquarters in Japan	-0.702*	-0.712*		
	(0.413)	(0.413)		
Headquarters in Europe	0.0582	0.0598		
	(0.378)	(0.377)		
Size	0.0586	0.0453	-0.0386	3.073***
	(0.104)	(0.105)	(0.104)	(1.090)
Tier 1	-0.177	-0.0987	0.139	-2.696***
	(0.298)	(0.305)	(0.360)	(1.304)
State GDP per capita	0.0927	0.0781	0.0446	3.352**
	(0.202)	(0.203)	(0.207)	(1.744)
State inspection intensity	-0.498	-0.426	-0.988	-12.57
	(2.223)	(2.232)	(2.405)	(10.19)
Total CIL certified plants	0.009**	0.009**	0.008**	0.002
	(0.003)	(0.003)	(0.003)	(0.017)
LR- Chi squared	107.14***	112.24***	59.14***	62.68***
Observations	1,705	1,705	1,160	545

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1 for one-tailed test

Appendix 1: Description of Control Variables

Variable	Description of Measure	Rationale for Inclusion	Data Source
Local density 5 to 10 km (ISO 14001/Clean Industry)	Ratio of certified facilities to total number of facilities located between 5 and 10 km of the focal facility	Control for certification patterns in the 5 to 10 km distance	Google Maps & ArcGIS
Mexican MNE	Binary: 1 if Mexican firm with manufacturing subsidiaries abroad	Superior access to knowledge and resources from abroad than domestic firms	Company websites
Plant age	Age of plant in Mexico (if not available, company age for 58 plants) (years)	Level of embeddedness with local institutional environment	Mexican Secretariat of Economy; Tax Administration Service & companies websites
Industry park plant	Binary: 1 if firm located in an industry park	Level of embeddedness with local institutional environment	ELM Guide Automotive Supplier database
Sub-assembler plant	Binary: 1 for those suppliers developing more specialized sub-assembly tasks	Asset specificity (customer-specific customized autoparts) may result in higher customer power and pressures	
Border city plant	Binary: 1 if located in a US-Mexico border city	More subject to international/US pressures	
Exports to high ISO pressure region	Binary: 1 if firm exports any of its output to respective region	Customer pressure (Japanese and European automakers high proactivity on ISO 14001) (Delmas & Montiel, 2009)	
QS 9000	Binary: 1 if certified	Plant is more likely to certify to ISO 14001 if they have QS 9000 quality certification	QS 9000 Registered Company Directory
Headquarter location (Japan, Europe)	Binary: 1 if plant headquarters located in respective country	Headquarters' pressures and embeddedness with local institutional environment	ELM Guide Automotive Supplier database
Size	Log of plant employees	Plant size may influence propensity to certify	
Tier I	Binary: 1 if Tier plant	Tier I plants face higher pressures from automakers	
State inspection intensity	Number of state environmental inspections conducted by the government divided by the number of firms in state	Firms may obtain certifications to reduce the likelihood of governmental environmental inspections (Montiel, Husted & Christmann, 2012)O	PROFEPA and Mexican Enterprise Information System
State GDP per capita	GDP per capita per state (Mexican pesos)	Pressures for environmental protection are higher in richer regions	Regional GDP per capita report
Total certified plants (ISO 14001 or CIL)	Total number of certifications in Mexico in given year	Overall certification volume within Mexico	Worldpreferred database & PROFEPA