Corporate Environmental Strategies in Emerging Economies
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Introduction

Many firms have concluded that integrating sustainability into their business strategy is profitable in developed countries (Esty and Winston 2006). However, the benefits to a firm of a proactive sustainability strategy are less clear in emerging economies, which include both developing and transition economies, where environmental and social regulations may be lacking or poorly enforced and demand for greener products may be virtually nonexistent (Blackman 2010). Ironically, these weak governance institutions mean that in some countries the actions of progressive business leaders may be the most powerful force for environmental improvement. Thus understanding the causes and consequences of corporate environmental strategy in emerging markets is critical for business leaders, policymakers, and environmental activists, so they are able to employ evidence-based practices in order to implement effective strategies, develop useful policies, and promote meaningful activities, respectively.

Both transition and developing economies seek economic growth and integration into the world economy, face financial constraints, and experience rapid transformation. However, transition economies are replacing one economic system with a fundamentally different system while developing economies are developing resources and institutions within the same economic system, generally a market system.

More generally, nations vary widely in their basic mode of economic organization, ranging from democratic capitalism to communism, with many forms of state capitalism in between. The economics literature on transition economies has generally focused on the

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1Developing economies are those whose physical and human resources, along with institutions, are still developing. Transition economies are those transitioning from reliance on the government’s allocation of resources to market-based allocations.

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The process of market-oriented reforms in promoting economic efficiency and growth because greater private ownership, a stronger orientation toward profit maximization, “harder” budget constraints, market competition, and openness to trade create powerful incentives for cost reduction and innovation. Although this transition literature has generally found that market-oriented reforms provide stronger incentives for firms to minimize costs, it is unclear whether these incentives actually prompt improvements in environmental performance. This ambiguity exists because some efficiency improvements simultaneously cut costs and improve environmental performance while others involve a trade-off between abatement costs and pollution-related costs, such as emission charges (Earnhart and Lizal 2006a). Unfortunately, there is no comparable literature on how the building blocks of functioning markets affect corporate environmental performance in developing economies.

This article examines the drivers of corporate environmental strategies in developing and transition economies and the heterogeneity in firms’ responsiveness to these drivers. Unlike previous studies of corporate environmental strategies, this article compares and contrasts transition and developing economies. We define corporate environmental strategy broadly to encompass a range of decisions—plant location, technology adoption, R&D, human resource management, product quality, and pricing—all of which can influence environmental performance (e.g., emissions, waste generation). Although some empirical studies examine measures of performance (Bluffstone 1999), most studies examine only the adoption of environmental management practices. Thus we focus our assessment on these practices that should lead to improvements in environmental performance. However, we acknowledge the risk of “greenwash,” whereby firms only present an appearance of improvement in environmental management because firms can implement practices with varying degrees of commitment and effectiveness.

In the case of developing economies, our assessment complements Blackman (2010), who emphasizes the policies that developing countries may enact to improve environmental quality. However, in contrast to Blackman (2010), we emphasize the strategies of firms rather than the policies of governments and analyze the differences across multinational companies (MNCs), domestic private enterprises, and state-owned enterprises in terms of their motivations to undertake environmental management.

As for transition economies, our assessment remains relevant even though much of the transition is complete in Central and Eastern Europe (CEE) and the former Soviet Union. Insights from our assessment offer important lessons for other countries such as China that are still transitioning (Bluffstone and Sterner 2006). Our assessment also provides a unique opportunity to examine the fundamental drivers of firm behavior more generally because a major economic transition generates dramatic changes in production technology, customer base, regulatory pressure, and motivations for production (Garcia, Bluffstone, and Sterner 2009).

The remainder of the article is organized as follows. The next section presents a theoretical framework for examining the drivers of corporate environmental strategy. Then we review empirical findings on these drivers for both developing and transition economies and examine the special case of China. We conclude with a critique of the empirical literature and a discussion of future research needs.
Theoretical Framework for Examining Corporate Environmental Strategy

Corporate strategy involves acquiring resources and building capabilities so that a firm can create a sustainable competitive advantage in one or more markets. A successful corporate strategy also requires a good fit with the external business environment including market factors such as demand elasticity and entry barriers (Porter 1980), as well as sociopolitical factors such as government regulations and social norms (DiMaggio and Powell 1983; Meyer and Rowan 1977). In addition, sustainable advantage requires internal organizational capabilities that are difficult for rivals to imitate (Barney 1991; Prahalad and Hamel 1990; Wernerfelt 1984).

At the most basic level are two “generic” corporate strategies: cost reduction and product differentiation (Porter 1980). To execute either strategy in the environmental arena, however, a firm must first acquire a fundamental capability—an environmental management system (EMS) that is a set of tools enabling a firm to monitor and control its environmental impacts. To make effective use of an EMS, a firm also needs a supportive internal structure and culture (Sandholz 2012; Short and Toffel 2010). Hart (1995) identifies a ladder of three key capabilities that are necessary once these basic requirements are in place, with each successive rung of the ladder encompassing the capabilities of the rungs below it: (a) pollution prevention (minimizing emissions and waste), (b) product stewardship (minimizing life-cycle environmental costs), and (c) sustainable development (minimizing the environmental impact of a firm’s growth and development).

Whether environmental strategies actually reduce pollution depends on the extent to which the firm’s external environment forces it to pay for its environmental impacts. The potential to preempt the threat of mandatory regulations and shape future regulations also influences corporate environmental strategies (Khanna and Brouhle 2009; Lyon and Maxwell 2004). Whether these strategies profitably differentiate the firm’s products depends on the extent to which consumers and other stakeholders value corporate stewardship as well as the ability of the firm to credibly communicate improvements in its production process.

Several drivers of corporate environmental strategy are prominent. We divide them into four categories: firms’ internal resources and capabilities, input and output market pressures, government pressure, and civil society pressure (see Figure 1).

Firm Resources and Capabilities

The resource-based view (RBV) of the firm argues that the firm’s resources and capabilities, such as physical capital, human capital, technology, and corporate culture, lie at the very heart of a firm’s corporate strategy (Barney 1991; Hart 1995; Wernerfelt 1984). In the long run, these factors represent choices made by firms. According to the RBV, better managers move more quickly to acquire key resources, thereby creating a durable competitive advantage.

Productive efficiency, which can result from either physical or human capital, varies substantially across companies. Theory suggests that firms seeking to maximize profits should adopt all win-win production practices that are both cheaper and cleaner. However, Porter and

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2Firms’ environmental strategies may also be shaped by managers’ intrinsic motivation for environmental stewardship including a desire to conform to societal or professional norms (Baron 2001; Nakamura, Takahashi, and Vertinsky 2001).
van der Linde (1995) provide numerous examples of firms that delay seizing win-win opportunities, perhaps due to managerial inattention. Some firms improve efficiency further to differentiate their products or in response to external pressures. Programs that certify implementation of environmental management practices and protocols, such as the International Organization of Standards (ISO) 14001 series, might lower costs by enhancing operational efficiency. In this case, however, firms with existing high-efficiency levels are less likely to seek certification (Neumayer and Perkins 2004).

Technology and size can also influence environmental strategy. Pollution abatement technologies often involve large fixed costs. Thus a firm’s current capital stock influences its abatement efforts since these fixed costs are easier to justify for larger firms. Similarly, ISO 14001 certification involves significant fixed costs: training staff, collecting information on past activities and current environmental regulations, and consultant fees. Access to external financing, which is usually easier for larger firms, allows firms to take advantage of profitable pollution-reduction opportunities. Greater size also facilitates division of labor and specialization. Thus larger firms’ employees are generally better able to understand relevant environmental regulations and capitalize on environmental opportunities. Lastly, larger firms are more visible and hence more easily targeted by environmentalists and regulators. Thus larger firms benefit more from the use of certification to deflect negative publicity.

A firm’s ownership structure can also affect its environmental strategy. Foreign-owned firms may face more regulatory pressure than domestic firms, depending on policymakers’ relative
interest in attracting foreign direct investment (FDI) versus protecting domestic companies. Foreign firms may also have better access to external financing, state-of-the-art technologies, and cutting-edge practices. However, MNCs face a challenging trade-off when operating in emerging economies. On the one hand, they face less external pressure than at home. On the other hand, they face incentives to maintain a common environmental protocol across facilities operating in different countries (in order to achieve global economies of scale and scope) and feel pressure from consumers, investors, and nongovernmental organizations (NGOs) in the countries where their major markets are located. Given the countervailing effects, one would expect foreign-owned MNCs to implement better environmental management practices than their domestic rivals.  

State-owned enterprises (SOEs) involve other complexities. First, since SOEs have unusual political access and status, regulatory agencies, environmental NGOs, and local communities may possess less leverage over SOEs. Yet these external stakeholders may also expect more environmental protection from public entities than from private companies (Earnhart and Lizard 2006a). Second, the objectives of SOEs tend to diverge from profit maximization, which may reduce production efficiency and increase pollution (Earnhart and Lizard 2007). SOEs are more likely to face “soft” budget constraints, which encourage inefficient behavior since firms can fail to cover costs yet survive over the long run through bailouts from government organizations (Organisation for Economic Co-operation and Development [OECD] 1999). At the same time, SOEs’ access to low-cost capital facilitates investment in efficient new technologies, and SOEs may be showcased by their governments, leading to better environmental performance among SOEs than among privately owned firms.

Although difficult to measure, leadership can be an important determinant of corporate environmental strategy. Corporate environmental initiatives commonly flounder without chief executive officer (CEO) support, and successful high-profile sustainability efforts often have substantial personal involvement from top executives (e.g., Lee Scott at Walmart). CEO leadership can help build a culture of shared organizational learning that is invaluable when building new capabilities in pollution prevention or product stewardship. Corruption is anathema to a learning culture because it raises the cost of transmitting information within the organization. Worse yet, it encourages employees to divert their attention from productive work and toward wasteful influence activities within the organization. CEO leadership can help eliminate corruption from a company.

**Market Pressures**

Numerous input and output markets can influence corporate environmental strategies. Product market competition can spur firms to adopt EMSs in order to lower costs by eliminating waste. Firms also attract green consumers by differentiating the firms’ products. However, since green products have limited demand in emerging economies, firms in emerging

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3 Globalization can also facilitate the transfer of technical and organizational capabilities to subsidiaries, suppliers, and other companies in emerging economies.
economies that export to developed economies are likely to pay more attention to the environment than firms that sell only domestically.

Customer pressure may extend through the supply chain. For example, downstream retailers selling in developed economies may require their suppliers in emerging economies to adopt, if not certify, particular environmental management practices (Prakash and Potoski 2006). This requirement can improve environmental performance upstream.

Input markets may also influence firms’ environmental strategies by mediating investors’ green preferences. If some green investors prefer to make their social donations through investments in socially responsible companies, perhaps in order to avoid taxation of corporate profits, firms can increase their value by attracting these green investors with better environmental management (Baron 2007; Graff Zivin and Small 2005). However, underdeveloped financial markets can constrain environmental improvement by failing to provide the liquidity needed by firms to invest in profitable green opportunities (Earnhart and Lizal 2006a).

Other types of input markets can also provide incentives for environmental improvement. For example, companies try to attract and retain the best employees by making environmental commitments that align with these employees’ environmental values. If such socially conscious employees are also less likely to shirk their job responsibilities, then companies can profitably screen for them by adopting socially responsible practices (Brekke and Nyborg 2008). Energy markets can also drive corporate environmental strategies. More specifically, energy taxes encourage innovation and the substitution of labor and capital for energy, yet energy subsidies encourage excessive reliance on the subsidized forms of energy and thus increase pollution.

**Government Pressure**

Government policy, or the threat of it, is also an important driver of corporate environmental strategies. In countries with strong enforcement of environmental laws, corporate compliance is a critical component of environmental management. To ensure compliance, the government must create a modern regulatory infrastructure—beginning with clear and comprehensive environmental laws—and constrain corruption. Countries also need adequate regulatory capacity, in the form of both educated public employees and systematic monitoring of emissions and ambient environmental conditions. Finally, regulators must be willing to impose sanctions when inspectors identify environmental violations. If any of these components is missing, environmental enforcement loses its effectiveness.

In this context, heavily polluting industries may relocate to developing countries with weak environmental enforcement, thus creating “pollution havens” that exacerbate global pollution (Taylor and Copeland 1995). The risk of pollution havens is reduced if consumers in developed countries are willing to pay a premium for environmentally friendly goods produced in emerging economies.

Corporate environmental strategies are also shaped by the *structure* of environmental regulations. Use of an emissions charge system allows environmental goals to be met more cheaply than through effluent limits because this system permits firms to vary the extent of their abatement and induces more abatement from firms with lower emission reduction costs. Emission charges also provide stronger incentives for innovation than effluent limits because
limits offer no regulatory reward for going beyond compliance. Similarly, a tradable emissions permit system, which allows firms to trade abatement burdens, lowers the cost of meeting environmental goals (relative to the use of effluent limits) by inducing more abatement from firms with lower emission reduction costs and provides stronger incentives for innovation than effluent limits.

Over the past two decades, both developed and emerging economies have increased their reliance on voluntary approaches and information disclosure programs (e.g., the US Environmental Protection Agency’s Toxic Release Inventory) to target environmental problems that have traditionally been ignored or poorly managed by mandatory regulations. Voluntary approaches generally fall into two categories: negotiated agreements and public voluntary programs. In a negotiated agreement, the regulator and the industry jointly set environmental goals and the means for achieving them; thus such agreements tend to be heterogeneous in nature. Under voluntary programs, such as Mexico’s Industria Limpia program, participating firms agree to make good faith efforts to meet program goals established by the regulatory agency; in return, they may receive technical assistance, reduced inspection priority, and/or favorable publicity from the government.

Environmental disclosure schemes, including firm-level environmental scorecards such as Indonesia’s PROPER, are becoming increasingly popular, in part because they do not require a comprehensive regulatory infrastructure. Disclosure programs operate through all of the nongovernmental external pressure channels discussed here: output markets, input markets, and civil society (Powers et al. 2011). These channels are likely to be more effective for large pollution-intensive, consumer-oriented firms than for small informal sector firms or SOEs because pressures from customers, investors, workers, and activists are generally greater for the former types of firms (Bu, Liu, and Gao 2011).

Companies may also undertake voluntary environmental actions in order to alter future government regulation (Lyon and Maxwell 2004). More specifically, they may self-regulate to preempt stricter regulations or to prompt implementation of a regulatory standard with which they can comply more cheaply than their rivals. Lastly, firms may voluntarily adopt an abatement technology in order to constrain the regulator’s ability to impose stricter regulation because abandonment of an adopted technology while it is still productive would be deemed too wasteful.

Civil Society Pressure

Civil society pressure, also known as “private politics” or “civil regulation,” is becoming increasingly important for corporate environmental strategy. With the rise of the Internet, NGOs have gained considerable influence in shaping firms’ environmental strategies. Sometimes NGOs can be helpful partners of firms by enabling them to convey credibly their environmental improvements to green consumers. However, since NGOs often attempt to punish environmentally irresponsible firms, corporate environmental management may also be profitable when it deflects negative NGO campaigns (Lyon 2010). Local communities may also exert pressure on firms independent of NGOs. This pressure depends on key factors such as freedom of speech, an independent press, and access to environmental information.
Empirical Literature on Corporate Environmental Strategy in Emerging Economies

We next assess the empirical literature on firms’ environmental strategies in emerging economies using the conceptual framework presented in the previous section as our guide. We discuss the drivers of corporate environmental strategy first in developing economies and then in transition economies.

Developing Economies

Many firms in developing economies have been adopting environmentally sound technologies, seeking ISO 14001 certification, implementing environmental initiatives, and improving compliance (Cushing, McGraw, and Lu 2005; Luken, Van Rompaey, and Zigova 2008). Recently, there has been exponential growth in the number of enterprises in developing economies obtaining ISO 14001 certification. For example, between 1997 and 2000, the number of annual certifications increased six-fold in Singapore and South Korea and eleven-fold in Thailand (Cushing et al. 2005). In 2009 China, South Korea, Thailand, and Singapore together accounted for 48 percent of all ISO certifications worldwide (Tambunlertchai, Kontoleon, and Khanna 2013).

Firms’ resources and capabilities

Empirical studies examine the effects of several internal corporate characteristics that are likely to influence environmental strategies including size, ownership, and managerial commitment to the environment. More specifically, they find that larger facilities are more likely to obtain ISO 14001 certifications in Thailand (Tambunlertchai et al. 2013), Hong Kong (Chan and Li 2001), and Mexico (Blackman and Guerrero 2012; Dasgupta, Hettige, and Wheeler 2000). However, the pursuit of ISO 14001 certification has generally not diffused to small and medium-size enterprises (SMEs), which account for the majority of enterprises in developing economies and primarily serve domestic markets (Chan and Li 2001). Additionally, studies show that firms with ISO 9000 certification, which reflects general production practices, were more likely to obtain ISO 14001 certification because their initial certification experience lowered their costs of further certification (Delmas and Montiel 2009; Potoski and Prakash 2004; Tambunlertchai et al. 2013). Moreover, firms with certain characteristics, such as an “environmental commitment” and technical, managerial, or organizational capabilities, were more likely to adopt environmentally sound technologies (Luken et al. 2008).

Several studies analyze ownership structure by examining the impact of FDI on firms’ environmental performance in developing countries; the evidence is mixed. Perkins and Neumayer (2008) find that the effect of FDI on pollution efficiency [gross domestic product (GDP) per unit of carbon dioxide or sulphur dioxide (SO₂)] across countries is mixed. In contrast, Luken et al. (2008) find clear evidence of a positive effect of FDI on the adoption of technologically complex pollution prevention practices. The findings of country-specific studies are also mixed. While Pargal and Wheeler (1996) and Dasgupta et al. (2000) find that foreign ownership had no significant impact on the environmental management of firms in Indonesia and Mexico, respectively, Garcia, Sterner, and Afsah (2007b) find that Indonesian firms with foreign investors were more likely to improve their environmental ratings following
public disclosure. Studies also show that countries with higher cumulative FDI relative to GDP had more ISO 14001 certifications (Neumayer and Perkins 2004). Moreover, FDI that originates in countries with high levels of ISO 14001 adoption appears to prompt firms in the host country to improve environmental practices and seek ISO certification (Christmann and Taylor 2001; Prakash and Potolski 2007; Tambunlertchai et al. 2013).

Empirical studies also show that many MNCs self-regulate their environmental conduct, participating in global voluntary initiatives and adopting internal environmental standards that are more stringent than those mandated by national governments in developing countries (Dowell, Hart, and Yeung 2000). This evidence appears to contradict the “pollution haven” hypothesis (Christmann and Taylor 2002; Eskeland and Harrison 2003).

Market pressures

Market-based pressures are generally weak in developing countries (Blackman 2010). The vast majority of firms are small (often operating in the informal sector) or state owned, and environmental product differentiation is less common than in developed countries. Consumer pressure on firms to be environmentally responsible is often weak due to low levels of awareness about the effects of environmental violations on health and relatively low demand for environmental quality because of low education and income levels. Nevertheless, some empirical evidence shows that the potential for increasing competitive advantage through improvements in operational performance or brand identity influences ISO 14001 certification with more efficient firms being less likely to certify (Neumayer and Perkins 2004) and firms with weaker product brand identity being more likely to certify (Potoski and Prakash 2004).

Empirical evidence indicates that those developing economies that export a higher share of their output to countries with higher rates of ISO certification (e.g., Japan) are also more likely to have high rates of ISO certification (Neumayer and Perkins 2004; Potoski and Prakash 2004). In contrast, developing countries exporting a higher share of their output to the United States, which has a lower ISO certification rate, have fewer ISO certifications.

Additionally, in their role as customers, MNCs transmit pressures for environmental responsibility through their supply chains and create incentives for suppliers in developing countries to improve their environmental practices (Christmann and Taylor 2002). For example, Arimura, Darnall, and Katayama (2011) find that ISO-certified facilities in Japan were 40 percent more likely to assess their suppliers’ environmental performance and 50 percent more likely to require that their suppliers undertake specific environmental practices. Van Hoof and Lyon (2013) find that supply chain pressures influence the environmental performance of SMEs in Mexico. However, in Thailand, being an exporter does not appear to increase the overall likelihood of ISO 14001 certification because supply chain pressures motivated ISO adoption among firms that produce intermediate goods but not among firms that produce final goods (Tambunlertchai et al. 2013).

Capital markets are also weak in developing countries and do not respond as strongly to information disclosure as in developed countries (Khanna 2001). First, given limited capacity for ambient and emissions monitoring, information may not be credible. Second, given a weak threat of penalties and third-party liabilities, investors and firms may pay little attention to poor environmental performance (Dasgupta, Laplante, and Mamingi 2001). Finally, in comparison to capital markets in developed economies, capital markets in developing economies, where
growth is a priority, may be more concerned about economic rather than environmental performance news. Nevertheless, empirical studies find that capital markets in developing economies react to both negative and positive environmental news (Dasgupta et al. 2001; Gupta and Goldar 2005). However, no empirical study assesses whether these reactions affect corporate environmental strategies.

Government pressure

As in developed countries, regulators in developing countries tend to rely on effluent limits. However, since regulatory institutions in developing economies are typically weak, with limited monitoring and enforcement capacity, environmental regulation in these countries generally is inadequate (Eskeland and Jimenez 1992; Russell and Vaughan 2003). Moreover, regulatory agencies in developing economies are subject to strong influence by industry lobbies, and corruption is more widespread in developing economies than in developed countries. Anecdotal evidence from large developing countries such as India and Indonesia suggests that corruption, lobbying, and lack of political will have stalled the drafting of environmental legislation and prevented effective implementation of existing pollution control laws (López and Mitra 2000).

To remedy this situation, many countries provide incentives for voluntary pollution reduction through information disclosure programs, pollution control subsidies, and regulatory relief for participating in certification programs. Consistent with regulatory relief, Tambunlertchai et al. (2013) show that regulators in Thailand were less likely to inspect firms with ISO 14001 certification, which may explain why firms that emitted more pollutants or faced more regulatory scrutiny were more likely to obtain ISO 14001 certification. Many countries also encourage ISO 14001 certification by creating training and demonstration programs, disseminating information about the benefits of certification, and, in some cases, providing financial awards to certified companies (Cushing et al. 2005). For example, the Taiwanese government encouraged firms to partner with registered technical assistance providers to apply for subsidies that could cover 40 to 60 percent of the cost of ISO certification, and Taiwanese firms that received a subsidy payment were significantly more likely to be ISO certified (Wu, Chu, and Liu 2007).

A number of developing countries have launched public disclosure programs (Blackman 2010) including the GreenWatch Program in China (Wang et al. 2004), Eco Watch in Philippines (Wang et al. 2004), Green Rating Program in India (Gupta and Goldar 2005; Powers et al. 2011), and PROPER in Indonesia (Garcia, Sterner, and Afsah 2007a). The studies just cited show that these programs reduced the percentage of firms that were noncompliant with environmental regulations. Moreover, Powers et al. (2011) find that India’s Green Rating Program led large pulp and paper plants with the worst initial environmental performance to reduce emissions of certain pollutants by between 9 and 19 percent. Similarly, Garcia et al. (2007b) find that Indonesia’s PROPER program prompted a 33 percent reduction in firms’ emissions. In some cases, compliance improved due to the threat of public disclosure before program implementation (Wang et al. 2004).

Chile, Mexico, Colombia, and Costa Rica have also used voluntary approaches to improve firms’ environmental performance (Blackman 2010). In Chile, voluntary agreements among firms and regulators established clear targets and timetables, firm-specific commitments, and a
mechanism for monitoring performance. Jimenez (2007) finds that these agreements increased regulatory compliance and led to greater process innovation, adoption of environmental management systems, and organizational changes. However, the agreements did not lead to significant adoption of preventive waste management systems, perhaps because the agreements rely on firms’ provision of information, which allows strategic behavior by firms. In fact, Jimenez (2007) finds some evidence that firms were able to negotiate unambitious waste management targets.

Other voluntary approaches in Mexico and Colombia were shown to be ineffective in achieving the initial commitments, in large part because these programs were not accompanied by well-established regulations, political and community pressure for environmental improvements, clear corporate commitments for voluntary improvements, and provisions for monitoring (Blackman 2010). Similarly, the Sustainable Tourism certification program in Costa Rica did not lead to higher environmental scores and improved environmental performance of participants (Rivera 2002). These findings suggest that firms in developing countries (like those in developed countries) are likely to voluntarily improve environmental performance only if there are pressures for emissions reduction, quantified baselines and targets, monitoring, and sanctions for noncompliance (Blackman 2010; Khanna and Brouhle 2009).

Civil society pressure

Civil society pressure is weak in developing economies due in part to concerns that environmental actions against firms could have negative economic and employment implications that create disincentives for community action against polluting firms (Van Rooij 2010). The potential for NGO and citizen protests to improve environmental performance is also limited because of inadequate regulatory capacity to take the enforcement actions that communities seek (Van Rooij 2010). Nevertheless, some evidence shows that civil society pressure has been effective. Using per capita measures of income and number of environmental NGOs as proxies for civil society pressure, Neumayer and Perkins (2004) find that stronger civil society pressure increases country-level ISO certifications. Similarly, Potoski and Prakash (2004) find that countries with higher rates of international NGO membership have higher rates of ISO certification. Finally, Pargal and Wheeler (1996) find that water pollution is lower in higher income areas.

Summary

In sum, the empirical findings for developing economies suggest that firms differ considerably in their adoption of environmental management strategies, driven largely by the level of engagement with foreign customers and international NGOs and the stringency of domestic regulations. For many locally owned firms, whose products are domestically consumed or exported to other less green countries, the market incentives for incurring the costs of strengthening their environmental standards are weak. Ineffective regulatory agencies, limited law enforcement capacity, and weak environmental pressure groups have also limited the incentives for environmental compliance by these firms. However, for firms that are supplying customers in developed economies or other downstream firms that care about the environmental practices of their suppliers, market pressures influence the adoption of environmental management practices. MNCs are more likely to be ISO 14001 certified and to require the same
of their suppliers. While this requirement has a spillover effect and leads to some diffusion of environmental management across firms in developing economies, the extent to which this occurs may be limited to larger export-oriented firms.

Transition Economies

We next examine the empirical literature concerning firms’ environmental strategies and the factors driving their implementation in the transition economies of CEE.

Firms’ resources and capabilities

The transition from centrally planned economies to market economies dramatically alters firms’ internal characteristics. Under central planning, enterprises used outdated production methods (OECD 1999), enterprises worked to meet centrally dictated output targets (Earnhart 1999), state ownership was prevalent, foreign ownership was minimal, and most enterprises faced “soft” budgets; that is, enterprises’ losses were covered by the government using subsidies or other instruments (Bluffstone and Larson 1997). During the transition, firms improved their efficiency (OECD 1999), most state-owned enterprises were privatized, firms reoriented themselves toward profit maximization (Bluffstone and Sterner 2006), foreign companies purchased state-owned enterprises and started businesses (Hughes and Lovei 1999), and budgets hardened as direct subsidies and finance subsidies were eliminated and bankruptcy laws were developed (OECD 1999). Moreover, during the transition, firms lacked meaningful access to external financing due to slowly and incompletely developing financial markets (Henriques and Sadorsky 2006).

Empirical studies assess the influence of these changes in firms’ internal characteristics on corporate environmental strategy. Henriques and Sadorsky (2006) find that greater internal pressure applied by firms’ management improves corporate environmental management in Hungary. Similarly, Bluffstone and Sterner (2006) find that internal pressure to reduce energy and material use increases the likelihood that CEE firms adopt three of six environmental management practices examined: internal air pollution monitoring, ISO 14001 certification, and wastewater treatment.

However, empirical evidence indicates that private ownership may not influence and may even undermine corporate environmental success. In one study, greater private ownership did not influence the likelihood of CEE firms adopting any of eight environmental management practices examined (Garcia et al. 2009). In another study, greater private ownership in Lithuania did not influence ratios of actual to permitted pollutant emissions of SO₂ and carbon monoxide, and actually increased nitrous oxide emission ratios; only in the case of particulate matter and magnesium emissions did greater private ownership lower emission ratios (Bluffstone 1999). In fact, greater private ownership in the Czech Republic led to higher air pollutant emissions; more specifically, greater state ownership reduced emissions relative to all types of private ownership, especially investment funds and strategic investors (Earnhart and Lizal 2006a).

Within the category of private ownership, domestic and foreign ownership may or may not influence environmental strategies differently. The empirical evidence is mixed whether foreign ownership improves the likelihood of CEE firms adopting environmental management practices and “clean production” investment (Andonova 2003; Garcia et al. 2009; Henriques and
Sadorsky (2006). Some studies find no evidence that private foreign ownership increases the likelihood of CEE firms adopting environmental management practices (Bluffstone and Sterner 2006) or reduces Czech air pollutant emissions (Earnhart and Lízal 2006a, 2007).

However, there is clear evidence that the scale of operation influences corporate environmental management in transition economies. Earnhart and Lízal (2006b) find that Czech firms enjoyed economies of scale in controlling air pollutant emissions. However, Lízal and Earnhart (2011) show that this relationship changed as the transition proceeded and air protection laws tightened so that firms faced diseconomies of scale at sufficiently high production levels. Moreover, larger Slovenian companies implemented better developed corporate environmental strategies (Čater, Prašnikar, and Čater 2009), and larger Slovenian enterprises were more likely to adopt a certified EMS; reduce material usage, packaging, and waste; and engage in environmental recordkeeping, reporting, and benchmarking (Knez-Riedl 2004).

Some empirical evidence suggests that profitability influences corporate environmental management in transition economies, indicating a role for liquidity constraints due to firms’ reliance on internally generated funds (Earnhart and Lízal 2010). Greater profitability led to lower air pollutant emissions from Czech companies (Brzobohatý and Janský 2010; Earnhart and Lízal 2007). However, greater corporate profitability increased the likelihood of Hungarian firms adopting only one of eight environmental management practices (Henriques and Sadorsky 2006).

Empirical evidence also indicates that the firm’s physical capital endowment may not influence corporate environmental strategies in transition economies. For example, the vintage of firm capital equipment did not affect the likelihood of CEE firms adopting an environmental plan or establishing an environmental department (Garcia et al. 2009). Other evidence suggests that “win-win” investments did not affect the air pollutant emission reductions of Czech firms (Earnhart and Lízal 2008).

Market pressures

The economic transition also alters market-based pressures. Under central planning, energy prices were substantially subsidized (Bluffstone and Larson 1997), domestic and import competition were severely limited, and domestic and foreign consumers exerted little pressure (OECD 1999). During the transition, energy subsidies were curtailed (Hughes and Lovei 1999), domestic and import competition grew quickly (OECD 1999), domestic consumer pressure grew moderately, pressure exerted by foreign consumers (especially those in Western Europe) rose dramatically (Garcia et al. 2009), and investor pressure grew as savvy foreign investors entered financial markets (Earnhart and Lízal 2008).

Several empirical studies examine the effects of these changing market pressures on firms’ environmental strategies. Customer pressure (measured by businesses’ self-reported perceptions) did not influence the likelihood of Hungarian firms adopting any of eight environmental management practices examined (Henriques and Sadorsky 2006). Moreover, evidence on the role of foreign customer pressure is mixed. For example, greater export orientation (measured by the proportion of exports to total production) increased the likelihood of CEE firms adopting an environmental plan and the likelihood of establishing an environmental department (Garcia et al. 2009). However, there is limited evidence supporting a link from export orientation to “clean production” investment by CEE firms and no evidence supporting a link
from export orientation to CEE firms’ environmental management practices (Andonova 2003). Greater export orientation improved the likelihood of Hungarian firms adopting only two of eight environmental management practices examined and actually reduced the likelihood of Hungarian firms using environmental criteria to evaluate employees (Henriques and Sadorsky 2006). Furthermore, greater export orientation, when measured by the share of a firm’s main product that is exported, improved the likelihood of CEE firms adopting only one of six environmental management practices examined by Bluffstone and Sterner (2006). Yet the same study shows that greater export orientation, when measured by the share of total exports sent to the European Union, actually undermined the likelihood of CEE firms adopting one practice.

Finally, investor pressure (measured by businesses’ self-reported perceptions) did not influence the likelihood of Hungarian firms adopting any of several environmental management practices (Henriques and Sadorsky 2006).

Government pressure

The economic transition also dramatically alters the role of government. Under central planning, environmental protection efforts were woven into the economic-based ministerial fabric or, if environmental ministries existed, they lacked power (Earnhart 2000); capacity to monitor ambient conditions and pollution was moderate (OECD 1999); legal frameworks were extensively developed yet too “weak” to control pollution (Hughes and Lovei 1999); the relationship between regulators and polluters was sympathetic toward polluters because most enterprises were state owned (Earnhart 2000); regulators did not regularly monitor polluters and enforce violations; and governments imposed effluent limits superimposed with emission charges, yet emission charge rates were low and constrained by soft budgets (Bluffstone and Larson 1997). During the transition, environmental ministries were established or replaced with Western-style agencies (Garcia et al. 2009); monitoring capacity grew as countries created or strengthened institutions (Garcia et al. 2009); governments strengthened environmental laws, with many eventually “approximating” their laws to EU standards; regulatory agencies eventually established more adversarial relationships with polluters (Bluffstone and Sterner 2006); the frequency of inspections and enforcement rose substantially as governments strengthened enforcement agencies (Bluffstone and Sterner 2006); and governments improved their emission charge systems and raised rates (Bluffstone 1999).4

Empirical studies analyze the altered role of government. Although no study explicitly examines the effect of new environmental protection laws on firms’ environmental strategies, one study scrutinizes CEE firms’ self-reported importance of expected future regulations in motivating improved corporate environmental management, and it finds that greater perceived importance improved the likelihood of CEE firms adopting three of six environmental management practices examined (Bluffstone and Sterner 2006). Weak evidence suggests that inspections influence corporate environmental strategies. More frequent monitoring lowered the ratio of actual to permitted emissions for one of five air pollutants emitted from Lithuanian

4The mix of environmental policies in transition economies focuses on effluent limits that are reinforced with inspections and enforcement, along with charges imposed on emissions below and above these limits. In developing economies, the prevalent policy mix includes permits imposing effluent limits, but with minimal monitoring and enforcement, to which several countries have added voluntary and information disclosure programs.
firms (Bluffstone 1999). Similarly, more frequent inspections improved the likelihood of Hungarian firms adopting two of eight environmental management practices examined by Henriques and Sadorsky (2006) and the likelihood of CEE firms adopting four of seven pollution control practices examined by Bluffstone and Sterner (2006).

Enforcement appears more influential than inspections. Greater enforcement—measured by warnings, orders to reduce pollution or close a plant, and noncompliance fines—improved the likelihood of CEE firms adopting environmental management practices and “clean production” investment (Andonova 2003; Garcia et al. 2009).

Evidence also suggests that imposing permit requirements along with effluent limits was moderately influential, improving the likelihood of CEE firms adopting half of the environmental management practices examined (Bluffstone and Sterner 2006). However, requiring that CEE firms hold a formal permit did not influence “clean production” investment (Andonova 2003). Limited evidence suggests that tighter emissions limits, combined with higher emission charge rates and reinforced with the threat of inspections, fines, and plant closures, led to lower air pollutant emissions from Czech and Lithuanian firms (Bluffstone 1999; Earnhart and Lizal 2008).

Civil society pressure

The economic transition also dramatically changes civil society. Under central planning, communist regimes placed limitations on civic activities and information dissemination, environmental NGOs were few, and local communities were inactive (Hughes and Lovei 1999). During the transition, civil liberties and the availability of information expanded (Garcia et al. 2009), many environmental NGOs formed, and local communities became active (OECD 1999), although public support for environmental protection flagged as post-communist economic concerns gained prominence (Henriques and Sadorsky 2006).

The empirical evidence suggests that environmental NGOs and local community pressure had little impact on corporate environmental strategy. Environmental NGOs played no meaningful role in the Czech Republic and Hungary (Earnhart and Lizal 2008). Local community pressure had mixed and generally very small effects on CEE firms’ environmental management practices and investments in cleaner production (Andonova 2003; Bluffstone and Sterner 2006; Henriques and Sadorsky 2006). In contrast, greater public disclosure—measured by whether the public was informed about pollutant emissions or whether a firm’s pollution appeared in media reports—improved CEE firms’ likelihood of adopting all of eight environmental management practices (Garcia et al. 2009).

Summary

The empirical findings for transition economies support the following conclusions. Firms in transition economies have strongly invested in pollution control equipment and methods, contributing to substantial environmental improvement (OECD 1999). The greater presence of internal characteristics such as enterprise management leadership, profit orientation, and production scale spurs better environmental management. Greater private ownership has ambiguous effects on environmental management; greater foreign ownership appears to improve it. While customer and investor pressure in general do not appear influential, greater pressure from foreign customers and from civic groups may improve environmental management. In
contrast, government policies—more useful laws, greater enforcement, permit issuance, and higher emission charge rates—meaningfully improve environmental management.

**The Special Case of China**

China is a special case since it represents a mix of a market-based economy, especially in the coastal export zones; a developing economy, especially in the rural regions; and a transition economy, especially the privatization of state-owned enterprises. In contrast to most developing economies, the Chinese capital stock is growing and modernizing quickly as the economy transitions from a centrally planned economy to a more market-based economy, and the Chinese workforce is relatively well educated. Like most transition economies, China imposes emission charges, yet like most developing countries, its enforcement of charge collection and regulations is often spotty (Van Rooij and Lo 2010).

**Background**

China has been implementing environmental laws to control pollution since 1978. Historically, the government has imposed emissions charges or levies that depend on various factors: total emissions, actual pollutant concentration, the pollutant concentration standard, and the levy rate (Wang and Wheeler 2005). The levy has operated as a deposit refund system: 80 percent of the cumulative levy payments may be received as a rebate or loan to cover the costs of documented pollution abatement. However, environmental problems have continued to worsen, largely due to insufficient enforcement by local governments that have protected local economic interests over environmental quality (Van Rooij and Lo 2010). Evidence suggests that local environmental agencies lack authority, organizational capacity, resources, and support from local communities (Marquis, Zhang, and Zhou 2011). Local environmental agencies also face powerful business interests that try to undermine enforcement actions, and enterprises use their bargaining power to negotiate the stringency of enforcement actions (Marquis et al. 2011). Moreover, state-owned and collectively owned enterprises have traditionally been closely connected with the government and have considerable bargaining power. Geographic differences in community pressure, local government support, enforcement capacity, and economic conditions have led to considerable variation in the enforcement of pollution laws (Van Rooij and Lo 2010). Finally, since the marginal levy rate declines as emissions rise, firms may actually have incentives to increase emissions in order to lower the overall levy (Van Rooij 2010).

China began experimenting with information disclosure programs in 1998 when the State Environmental Protection Administration, together with the World Bank, created GreenWatch, a program that rates firms’ environmental performance (Wang et al. 2004). Since 2006, there has been a growing effort to more strongly couple regulation and enforcement as national priorities have shifted more toward sustainable development, which includes an increased emphasis on investment in energy conservation, pollution reduction, and ecosystem protection (Zhu, Cordeiro, and Sarkis 2012a). Moreover, environmental agencies have been promoting environmental reporting and investing extensively in environmental monitoring systems that can provide a basis for enforcement (Zhu et al. 2012a). The government has
also promoted cleaner production through legislation (e.g., the 2003 Cleaner Production Promotion Law).

At the same time, the Chinese public has begun to express concern about environmental degradation and to exert pressure on corporations and the government to enforce environmental laws. The number of complaints to environmental protection agencies by NGOs and environmentalists doubled between 2001 and 2008 (Marquis et al. 2011). Moreover, with increasing privatization of enterprises and a growing number of smaller enterprises, the influence of large enterprises and local dependence on large enterprises has decreased, resulting in a shift from the previously cooperative relationship between regulated enterprises and local environmental agencies to one that is more adversarial (Marquis et al. 2011). Combined with these growing domestic pressures for improved corporate environmental management, the increasing internationalization of the Chinese economy has exposed firms to export market pressure for better corporate environmental management (Van Rooij and Lo 2010).

Empirical Evidence

Empirical evidence concerning the impact of the pollution levy on corporate environmental management is mixed. Over 90 percent of water polluters and 50 percent of air polluters were noncompliant in 1993 (Wang and Wheeler 2005). However, levies apparently deterred noncompliance with air and water standards and induced process change rather than end-of-pipe treatment (Wang and Wheeler 2003, 2005). Surprisingly, an increase in inspections associated with levies appears to have prompted more pollution (Lin 2012).

Some of these studies show that firms were able to influence the effective levy rate (levy paid per unit of wastewater discharged). Specifically, larger enterprises paid a higher effective levy than SOEs and facilities that employed more workers, were less profitable, demonstrated significant effort to abate pollution, or had a positive environmental image to negotiate lower levy payments; however, facilities successful in getting a refund from previous levies paid a higher current levy (Wang et al. 2004; Wang and Wheeler 2003, 2005).

Recently, many Chinese firms have adopted stronger environmental management systems. The number of ISO 14001 certified Chinese firms has exploded. By the end of 2008, China ranked first worldwide (Qi et al. 2011). Firms have also been adopting Total Quality Environmental Management (TQEM) systems to prevent or reduce pollution, expanding eco-auditing programs to improve their environmental performance, and disseminating environmental information publicly (Zhu et al. 2012a; Zu, Sarkis, and Lai 2012b).

Studies analyzing the motivations for these environmental management improvements indicate the importance of internal characteristics. Larger firms were more likely to seek ISO certification (Cushing et al. 2005). Findings about the role of foreign ownership are mixed. Qi et al. (2011) find that foreign ownership did not affect firms’ adoption of ISO 14001, while Zhu et al. (2012a) find that firms with foreign ownership or joint-venture status were more likely to adopt environmental management systems like ISO 14001 and TQEM. Firms with foreign investors were also more likely to have a higher GreenWatch rating (Bu et al. 2011).

Several studies show that pressure from firms’ customers in Japan and the European Union and from MNCs within China has motivated suppliers to seek certification. For example, firms exporting a larger share of their output to Japan and the European Union were more likely to be environmentally compliant (Christmann and Taylor 2001; Qi et al. 2011). Christmann and
Taylor (2006) find that Chinese firms are strategic in their response to various product market pressures. Specifically, firms choose more substantive, as opposed to symbolic, implementation of environmental management, if their customers (a) place greater importance on environmental management, (b) engage in direct and frequent monitoring of firms, or (c) have relatively low costs of switching suppliers. Pressures stemming from foreign consumers, environmental regulations, and competitor firms are more important for inducing adoption of ISO 14001, TQEM, and eco-auditing than pressures from domestic consumers, environmental regulations, and competitor firms (Qi et al. 2011; Zhu et al. 2012a).

Regarding financial markets, Lyon et al. (2013) find that firms winning Green Company Awards in China from 2008 to 2011 experienced, on average, insignificant effects on shareholder value and in some cases significantly negative effects, with low-pollution industries actually being punished for improving environmental management. These findings suggest a limited or perverse role for investor pressure. However, there is no empirical study examining whether financial market reactions influence corporate environmental strategies.

This emerging body of literature on corporate environmental strategies in China suggests that the internationalization of China has the potential to raise the bar rather than prompt a “race to the bottom” and to enable domestic firms to learn from their local and foreign competitors. As domestic firms become integrated into the global supply chain, they should have greater incentives to differentiate their products based on environmental management practices and pollution-reduction efforts.

**Summary and Conclusions**

This article draws on theoretical and empirical research to examine the key drivers behind corporate environmental strategies in developing and transition economies. These drivers include firms’ internal resources and capabilities, pressures from input and output markets, and pressures from government and civil society. The empirical findings for developing economies suggest that government and civil society provide weak incentives for corporate environmental compliance; foreign ownership and foreign customer pressure improve environmental management practices; and information disclosure programs offer some promise for improving corporate environmental performance. The empirical findings for transition economies also suggest a positive, albeit weaker, role for foreign ownership and foreign customer pressure in improving firms’ environmental performance. However, the findings also indicate that government policies, such as stricter enforcement, granting of permits, and higher rates for emission charges, are more effective in transition economies than in developing economies.

Although these empirical findings are meaningful, empirical research on corporate environmental strategy in emerging economies remains limited. Empirical research on developing countries focuses too narrowly on explaining large firms’ adoption of environmental management practices and ISO certification, which are only rough indicators of the early stages of corporate environmental strategy. In contrast, very limited research analyzes environmental strategies of small scale and informal sector firms. More work is also needed on the drivers of noncompliance with environmental regulations, lobbying efforts by firms to preempt regulations, regulatory capture, and evasion of inspections and fines. Future research should also
examine the effect of regulatory capacity and autonomy on enforcement, along with the institutional structure of regulation and its implications for firms’ environmental strategies.

The empirical literature on transition economies is more developed. Still, it focuses almost exclusively on pollution prevention while ignoring product stewardship and sustainable development. Moreover, most studies of pollution reduction examine emissions without reference to any legal limit. Thus assessments of compliance with effluent limits and both product stewardship and sustainable development remain areas ripe for research. Although the literature on transition economies examines several drivers of firm behavior, such as ownership structure, other drivers, including leadership, cost savings, consumer and investor pressure, emission charges, civil society, corporate culture, budget constraints (hard versus soft), and trade associations, require more attention from researchers. Lastly, the empirical literature on transition economies does not examine the full extent of the transition period or the full geographic scope of the transition region. Only one study—Henriques and Sadorsky (2006)—examines the later transition period, which begins roughly in 1999, and no rigorous study analyzes micro-level data on firms operating in the slower reforming transition economies such as Russia and Albania. More research is needed to increase our understanding of the role of emerging green markets in these countries and the potential for firms to strategically preempt environmental regulations in these increasingly important emerging economies.

References


Bu, Maoliang, Zhibao Liu, and Yanyan Gao. 2011. Influence of international openness on corporate
Chan, Ka-Yee, and Xiang-Dong Li. 2001. A study of the implementation of ISO 14001 environmental management systems in Hong Kong. Journal of Environmental Planning and Management 44: 589–601.


Van Hoof, Bernhardus, and Thomas P. Lyon. 2013. Cleaner production in small firms taking part in Mexico’s sustainable supplier program. Journal of Cleaner Production 41: 270–82.


