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EMERGING ECONOMIES :
EVIDENCE FROM THE OIL, GAS, AND CHEMICAL SECTORS
OF TRINIDAD AND TOBAGO**

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Abstract

As environmental regulations increase, industry associations play a growing role in representing their respective members. This role has been documented in many industrialized countries but less so in emerging economies. In this study we investigate the level of corporate environmentalism exhibited by member firms of two different industry associations operating in the emerging economy of Trinidad and Tobago. Findings indicate that firms that are members of the foreign originated American Chamber of Commerce of Trinidad and Tobago appear to show stronger corporate environmentalism than those belonging to the locally formed Chamber of Commerce. Enhanced institutional pressures from these respective industry associations, peers and competitors within associations, access and exposure to best practices and networking opportunities may explain these differences. These results suggest that environmental policy makers in emerging economies may be able to leverage foreign originated industry associations to promote stronger corporate environmentalism.

Keywords:

Environmental policy, industry associations, corporate environmentalism, emerging economies, neo institutional theory

Introduction

While there is a growing body of scholarly literature on the influence of stakeholder pressures on corporate environmentalism (**Henriques & Sadosky 1996; Delmas & Toffel 2004; Fineman & Clarke 1996; Banerjee 2001; Banerjee, Iyer & Kashyap 2003; Sharma & Henriques 2005; Eesley & Lenox 2006**), few researchers **have focused their attention on the role of industry associations in this regard** (Wade-Benzoni et al 2002). Industry associations are defined as organizations that represent a group of professional, trade or commercial firms (King & Lenox 2000). Studies by Hoffman (1999) and King & Lenox (1999) suggest that firm affiliation to North American industry associations may be linked to stronger corporate environmentalism (Hoffman, 1999; King & Lenox, 1999). Even fewer studies have sought to explore if this finding is context specific or also occurs in different regulatory and operating environments such as those of developing countries (Rivera 2002; Shah & Rivera 2007).

Just as parent companies influence subsidiaries by engendering environmental corporate culture (Darnall 2009), in this paper we attempt to understand if the industry association can similarly engender a change in corporate environmentalism among members. If a similar relationship between industry associations and corporate environmentalism does exist in developing country contexts, it will be a useful contribution given the rapid degradation of these countries' environments with the onset of globalization, industrialization, and spread of multinational corporations. Industry associations may well be an important factor in stemming the "race to the bottom" as described by Porter (1999) and others.

Relying on neo-institutional ideas, in this paper we seek to investigate whether affiliation to different types of industry associations is associated with higher corporate environmentalism in a developing country context. Specifically, we set this study in Trinidad and Tobago and its burgeoning energy and chemical industry sectors.

The following sections of the paper first provide context information about Trinidad and Tobago and about its oil, gas, and chemical industries. Then, we discuss the various industry associations operating in this country. Next, we outline neo-institutional theory basic principles and concepts and discuss the relationship between industry associations and firms' corporate environmentalism along with our hypothesis. We then present the methodology used to collect this new data and explain the analysis done along with the results of the study. Finally, we present a discussion based on the results and drawing from the theoretical underpinnings of neo-institutionalism initially put forward. Conclusions and their possible implications to policy makers and researchers are made at the end.

Background of Trinidad and Tobago

Trinidad and Tobago is an independent unitary island state in the southern Caribbean. It is rich in oil and gas resources and is one of five countries in the Latin American region (the others are Mexico, Venezuela, Columbia and Ecuador) where hydrocarbon production is the main economic activity (Inter American Development Bank 1998). Trinidad and Tobago's main trading partners are the USA, Canada, UK, Brazil, Germany, and the rest of the Caribbean. U.S. investments in energy related projects in 2002 were nearly one and a half billion dollars (World Bank 2003).

Approximately 47 percent of the islands' land area consists of intact forests but this is changing at a rapid rate with industrial expansion and urban sprawl (Environmental Management Authority 2004). The main environmental challenges include freshwater and marine pollution, watershed degradation, air pollution from factory stacks and manufacturing particulates, and waste disposal, including solid and hazardous wastes from industry. Economic sectors identified as main sources of pollution are manufacturing related to the processing of raw materials, intermediate and final products from various commodities including ammonia, methanol, chlorine, urea, paint, petroleum hydrocarbons, glass, clay, asphalt, cement, iron and steel (Environmental Management Authority 2000). Trinidad and Tobago is also listed as the fifth largest carbon dioxide emitter per capita in the world (United Nations 2007).

The Environmental Management Authority (EMA) is the focal regulator gaining its authority through the *Environmental Management Act of 1995*, but at a broad level, other responsible agencies include the Ministry of Environment, the Factories Inspectorate, and statutory authorities like the Bureau of Standards. In 2000, an Environmental Commission was appointed as a special court of law for adjudication of environmental matters.

Like in many other developing countries, these environmental regulations suffer from poor implementation and enforcement because of the lack of sufficient resources at the EMA, lack of research, uncoordinated agency efforts, corruption, and lack of political will by government officials (Potoski & Prakash 2000; Blackman 2000; Ramlogan & Persadie 2004). Simultaneously however, Trinidad and Tobago has seen tremendous growth in public environmental awareness, attributable to increased media attention to

environmental issues, increased NGO activity, and enhanced environmental education programs (Ramlogan & Persadie 2004).

The Oil, Gas, and Chemical Industries of Trinidad and Tobago

In Trinidad and Tobago, the oil and gas sector includes those firms involved in upstream oil and gas production and exploration and downstream processing and manufacturing and the chemical sector includes those firms whose production is dependent on large inputs of cheap energy from oil and gas feedstock as well as other chemical manufacturing. These sectors have been identified as the most environmentally problematic in the country but at the same time are considered the most important contributors to the economy accounting for 50 percent of the GDP (Environmental Management Authority 2000; Solid Waste Management Company of Trinidad and Tobago 2000; Central Bank of Trinidad and Tobago 1999). There is now increased emphasis on natural gas production and downstream petrochemical and processing investments. Natural gas feedstock has made Trinidad and Tobago a leading world producer of chemicals such as methanol, ammonia, fertilizers and liquefied natural gas. For example, in 2006 the U.S. imported 16 percent of its natural gas, with some 73 percent of this coming from Trinidad and Tobago (South Trinidad Chamber of Industry and Commerce 2006). These sectors are largely concentrated with most production volume coming from multinational and state owned firms. Small and medium enterprises dominate downstream production and manufacturing. Multinationals based in the United States, Canada, Britain, Germany, and Australia as well as firms headquartered in South America, East Asia, and Europe all operate in Trinidad and Tobago. Government policy

now focuses intensely on developing downstream industry and encouraging local business to play a more active role. Oil production is predicted to decline over the next 30 years, but natural gas reserves (the sixth largest in the Western hemisphere) are only just beginning to be exploited.

Industry Associations in Trinidad and Tobago

In this study an industry associations are defined as organizations that represent a group of professional, trade or commercial firms. They can be differentiated based on criteria such as their international scope, industry membership, and focal policy interests. We focus on the two most nationally influential and publicly visible industry associations in the country: The American Chamber of Commerce of Trinidad and Tobago and the Trinidad and Tobago Chamber of Commerce.

The American Chamber of Commerce of Trinidad and Tobago declares its aim *“to be the preferred private sector business organization for the stimulation of free and fair trade and investment within the Americas and the Caribbean”* (American Chamber of Commerce of Trinidad and Tobago 2008). The organization’s stated objectives are:

(i) *“To enhance competitiveness by aiding and identifying opportunities presented by globalization.”*

(ii) *“To generate new business and market access for services and goods – by promotion of interaction among member companies, with key government agents in Trinidad and Tobago and the United States and with the American Chamber of Commerce of Trinidad and Tobago in Latin America and the Caribbean.”*

(iii) *“To influence national policies and legislation by working with the government and relevant agencies to ensure that the economic environment in*

Trinidad and Tobago facilitates foreign and domestic trade and investment; utilizing it's alliances with the United States Embassy, the Association of American Chambers of Commerce of Latin America, and others to promote Trinidad and Tobago as a premier foreign direct investment destination."

(iv) "To transfer knowledge by facilitating access to information and leveraging experiences and best practices from its multinational members to raise industry standards and positively impact national issues."

(v) "To contribute to sustainable development by promoting and fostering an entrepreneurial culture and good corporate citizenship that encourages sustainable economic prosperity for Trinidad and Tobago."

The Chamber is a branch member of US Chamber of Commerce, the world's largest business federation representing more than three million businesses and organizations of every size, sector and region. The U.S. Chamber of Commerce coordinates a network of twenty-four such local Chambers of Commerce in twenty-one countries in the Western Hemisphere. This gives its membership a unique advantage in facilitating linkages, networking, and developing activities that lead to the generation of business and market access for their services and goods. Furthermore, these branch Chambers gain perspective from the parent Chamber in the U.S. and this in turn influences their position on governance issues such as environmental policy (O'Toole, 2005).

The American Chamber of Commerce of Trinidad and Tobago comprises several committees including one specifically dedicated to "Health, Safety and Environment". This committee has been in existence for over a decade and aims *"to provide direction and leadership and proactively promote environmental safety and health values for the*

sustainable future of our companies, communities and nation". Through this committee, the Chamber has been involved in numerous activities including influencing health, safety, and environmental legislation, policies and procedures to the benefit of its members; fostering health, safety, and environmental consciousness and awareness throughout the membership and the national community; building effective relationships with key ministries, agencies, nongovernmental organizations and associations; and sharing best practices among the Chamber membership. The Trinidad and Tobago Chamber of Commerce is the oldest indigenous Chamber in Trinidad and Tobago having been established in 1879 with the motto "*to protect the general interests of the business community.*" The association's mission statement is "*to be recognized by our members and the government of Trinidad and Tobago as the most vibrant, influential and authoritative organization in Trinidad and Tobago and the leader in the support of globalization as a means of wealth creation*" (Trinidad and Tobago Chamber of Commerce 2008). The Chamber lobbies on behalf of its members' interests and has made a profound impact on the development of the national economy (Lucie-Smith 2006). The association focuses on generating opportunities for its members to leverage shared resources, knowledge, and contacts in order to create a competitive advantage in the global marketplace. The organization provides its over five hundred members with a range of services through specialized committees including alternative dispute resolution, mediation and arbitration services, business referrals, certifications, industrial relations data, and international trade negotiations among others.

Notably, the Trinidad and Tobago Chamber of Commerce does not maintain any environmental management committee, but a Committee on Community Improvement,

Health and Wellness that has from time to time addressed some environmental health issues. All new members subscribe to a Code of Conduct comprised of eight principles, one of which specifically addresses “Communities and the Environment”. It states:

- (i) *“Members shall minimize any damage to the environment arising from their activities;*
- (ii) *“Reduce the environmental and health impact of all operations through the responsible use of natural resources, conservation practices and the reduction of waste and emissions.”*
- (iii) *“Insure that in the production of all goods and services they will meet lawful environmental standards related to the industry.”*
- (iv) *“Arrange for the safe handling transport and the disposal of raw materials products and waste according to the law and”*
- (v) *“Work in partnership with others to promote environmental change, increase understanding of environmental issues and disseminate good practice.”*

While all members are required to adhere to these rules under penalty of membership termination should there be violation, so far, this penalty has not been invoked on any firm.

Industry Associations as drivers of corporate environmentalism: A Neo-Institutional perspective

We believe that neo-institutional theory can provide important insights into the relationship between corporate environmentalism and industry association membership. Neo-institutional theory emphasizes the role of social and cultural pressures imposed on organizations, and how these pressures influence organizational practices and structures

(Scott 1995; DiMaggio & Powell 1983). It emphasizes the desire of organizations to gain legitimacy and the tendency for institutionalized organizational structures and procedures to be taken for granted regardless of their efficiency implications (Hoffman & Ventresca 2002). Part of the power to make firms more environmentally responsible lies in institutions which include government, shareholders, and society each of which exerts pressures described as coercive, mimetic and normative in nature. Industry associations in Trinidad and Tobago operate in a small economy highly dependent on natural resource extractive industries; dominated by large foreign firms; and under an infant environmental regulatory regime with environmental agencies suffering from an endemic lack of political, technical, administrative, and financial resources.

In this operating environment, the normative and mimetic pressures industry associations exert on member firms may play an important role in influencing their corporate environmentalism. Coercive institutional pressures to comply with environmental regulations are relatively weak since facility oversight is not regularly performed by the Environmental Management Authority (O'Rourke 2003; Ramlogan & Persadie 2004; Shah & Rivera 2007). As a consequence, these coercive pressures from regulators tend to be of secondary importance. The weakness of regulatory pressures serves to make the role of industry associations and the pressures they exert even more important. Even in developing countries, industry associations have a strong interest in maintaining a positive industry wide environmental reputation in order to avoid increased scrutiny from international environmental groups, foreign media, and regulators which may lead to the imposition of new regulations (King & Lenox 2000).

Several past studies indicate that industry association membership can be associated with higher corporate environmentalism (Hoffman 1999; King & Lenox 2000; Rivera 2002) and that pressures exerted by industry associations likely play a strong role, with industry associations becoming a vehicle for the definition and promotion of normative firm behaviors. Normative pressures usually exert influence on firms by relying on peer pressure and embarrassment of those that do not comply (Hoffman 1997). Improvement may also be driven by industry associations when individual firms are made to be sensitive about their reputation. That is, the sensitivity of the firm to the way it is perceived as a legitimate organization by its fellow members who are peers and competitors. Legitimate businesses are those whose actions are seen as, or presumed to be, “desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman 1995).

Firms improving their corporate environmentalism out of legitimation reasons may also do so in order to comply or stay ahead of regulation (Shrivastava 1995; Bansal & Roth 2000; Banerjee et al. 2003; Clemens & Douglas 2006) or regain reputation lost to past environmental violations. Firms may also view their membership in industry associations as a marker of legitimacy in the operating environment especially when peers are also members. Additionally, firms may continually renew their membership yearly in an institutionalized reflex motion, because it has become a habit rather than because identified benefits are derived from membership.

Mimetic pressures emerge from the tendency to imitate practices from successful peers. This tendency is higher when firms experience uncertain or

ambiguous situations such as those imposed by environmental management decisions (DiMaggio & Powell 1983; Hoffman 1997). **In situations short on information valuable to predicting the firm's next strategic actions, firms may emulate the decision behaviors of market leaders. They do so to keep the firm from suffering social or financial sanctions resulting from actions deviating from the social norm.** In such cases firms may model themselves on other firms they perceive as successful. This kind of mimicry may occur unintentionally and indirectly, or explicitly, diffused by industry associations (**Jennings & Zandbergen 1995; Rivera 2002; Bansal 2005; Clemens & Douglas 2005; Shah & Rivera 2007**). Industry associations can also coordinate access to a wealth of valuable environmental management knowledge and technical assistance including foreign information sources, systems, technologies, and environmental experts and specialists that are unavailable or inaccessible outside of the association.

Foreign originated industry associations like the American Chamber of Commerce of Trinidad and Tobago, that were originally established in advanced industrialized countries may have enhanced visibility locally and abroad, further increasing expectations and monitoring of their members' environmental practices compared to those of firms belonging only to local industry associations. Industrialized country originated industry associations may also have enhanced capabilities and resources to access foreign technologies, experts and best practice guides in a faster, less expensive manner than local industry associations, further providing mimetic incentive to member firms. The market and cultural context in the most advanced industrialized countries is also more favorable to environmental and social protection efforts and thus

may make the top officers of international industry associations more receptive to environmental policy concerns and regulations (Levy & Kolk 2002; Rivera 2004). Based on these arguments we propose that:

Firms with membership in industry associations originally established in advanced industrialized countries are more likely to have stronger corporate environmentalism than firms with membership in local industry associations established in developing countries.

Research Methodology

Sample selection

The population of interest in the study comprised of firms in the local sectors coded by the Central Statistical Office of Trinidad and Tobago as “Oil and Gas”, and “Chemicals/Non Metallic Industries”. Oil and gas industries include oil and natural gas exploration and production, refineries; bulk raw material manufacturers, industrial waste treatment facilities, structural fabricators, transportation of oil and gas, petrochemicals including downstream manufacturers, and natural asphalt, and asphalt products. Chemicals and non-metallic industries include industrial gases, paints and varnishes, pharmaceuticals, soaps and detergents, adhesives and waxes, pigments and inks, pesticides, cement, glass and glass products, plastic products, clay products, asbestos products, and plastic packaging. The focus on this grouping of industries is spurred by the Environmental Management Authority’s finding that these sectors account for the most significant pollution problems being faced by the country at present.

A comprehensive list of the population of oil, gas, and chemical firms was compiled using the latest Business Establishment Survey published by Trinidad and Tobago's Central Statistical Office Digest (2004). A total list of 734 firms (539 oil and gas sector; 195 chemical sector) were of initial interest. Firms with less than ten employees and those not directly involved in actual operations and processing were omitted leaving a final sample frame of 231 firms.

The representativeness of the respondent group was verified by t-tests conducted between respondent and non-respondent firms along known dimensions such as age and size. No significant difference was found in the mean age or size of firms (t-probability $<.001$). Survey selection bias was tested by comparing the corporate environmentalism ratings of early survey responders to late survey responders (as a proxy for non-responders) as suggested by Christmann (2000). Results of t-tests indicated no significant difference in corporate environmentalism ($p<.001$).

Data collection

Two questionnaires were developed to collect data following Dillman's total design methods to maximize response rates (Dillman 1978) and administered over a six month period. One questionnaire was administered to top managers to collect information about basic firm characteristics (e.g. size, location, industry association membership, etc). Requests for interviews were made up to four times over a two month period as necessary. Each firm survey was conducted in face to face interviews. Another questionnaire was administered to external stakeholders (see explanation below of how they were selected in the dependent variable measure).

Variables

Dependent variable: Corporate environmentalism. The level of corporate environmentalism of each firm was determined using external stakeholder ratings. We adapted a scale originally developed by Banerjee (2002) to measure the corporate environmentalism construct in the Canadian oil and gas sector (Banerjee 2002). This Likert type rating scale assesses four areas of corporate environmentalism: internal environmental orientation, external environmental orientation, corporate strategic focus, and functional strategic focus. A total of sixteen question items across these four areas comprise the corporate environmentalism rating (see table 1). Perceptual scale measures such as these are considered appropriate in situations where chemical/physical indicator measures, for example levels of emissions and pollutants, are either nonexistent or inaccessible (Sharma & Vredenburg 1998). This is a common predicament in most developing countries (Rivera & de Leon 2005).

Through the interview process with firm managers, we were able to identify some of the key community, value chain, and government stakeholders who were aware of firms' environmental performance and practices. This information was triangulated with other sources such as company reports and newspaper reports to further substantiate which stakeholders were most informed. For example, we were able to detect which nongovernmental organizations operated in the vicinity of firm operations or which ones constantly approached the firm for environmental information.

TABLE 1. Corporate Environmentalism Rating Scale*

Environmental Orientation: Internal

1. The firm makes a concerted effort to make every employee understand the importance of environmental preservation.
2. The firm has a clear policy statement urging environmental awareness in every area.
3. Environmental preservation is a high priority activity in the firm.
4. Preserving the environment is a central corporate value in the firm

Environmental Orientation: External

5. The financial well being of the firm does not depend on the state of the natural environment.
6. The firm has a responsibility to preserve the environment.
7. Environmental preservation is vital to the firm's survival.
8. The firm's responsibility to its customers, stockholders, and employees is more important than its responsibility towards environmental preservation.

Environmental Strategic Focus: Corporate

9. The firm has integrated environmental issues into its strategic planning process.
10. In the firm, "quality" includes reducing the environmental impact.
11. The firm links environmental objectives with other corporate goals.
12. The firm is engaged in developing products and processes that minimize environmental impact.
13. Environmental issues are always considered when new products are developed or new services offered.

Environmental Strategic Focus: Functional

14. The firm emphasizes the environmental aspects of its products and services in advertising.
15. The firm's development and marketing strategies for new products and services have been influenced by environmental concerns.
16. In the firm, product-market decisions are always influenced by environmental concerns.

*Adapted from Banerjee (2002). Each item uses a 7 point Likert type scale where 1 equals "strongly disagree" and 7 equals "strongly agree".

We also identified value chain stakeholders such as contractors and business partners who the firm dealt with in close business relations such as joint bidding. Additionally, we spotted government stakeholders including those regularly involved in monitoring or environmental analysis activities or involved in any permitting process in the course of firm operations. In this way, a short list of community, value chain and government stakeholders were identified for each firm. One representative of each

stakeholder type per firm was then randomly selected to complete the Stakeholder questionnaire. Table 2 lists all the stakeholders interviewed and the number of interviews done. The overall corporate environmentalism score (percent) for each firm is obtained by calculating the average for the three stakeholder ratings. That is, the Likert scores for all sixteen items included in the scale are tallied up for each of the three stakeholders, and then they are divided by the maximum possible score and multiplied by one hundred to yield a percentage rating.

To ensure the validity and reliability of the overall scale, factor analysis and Cronbach's alpha were calculated. Scale validity was determined using factor analysis with varimax rotation which confirmed the uni-dimensionality of the scale. A Cronbach's alpha coefficient equal to 0.94 also indicated that the measurement scale was reliable for measuring the corporate environmentalism construct. Pedhazur & Schmelkin (1991) recommend that a Cronbach's alpha >.80 is acceptable. Table 3 below summarizes these results.

TABLE 2. Stakeholder List

(Number in parentheses indicates the number of interviews conducted with each stakeholder)

Community/ NGO Stakeholder Group

Arts for Education (3)	Natureseekers (4)
Asa Wright Nature Center (5)	Orchard Gardens Residents Assoc. (2)
Brasso Seco Residents Association (1)	Point Lisas Community Center (3)
Caribbean Conservation Association (4)	Pointe-a-Pierre Environmental Movement (2)
Couva Business Association (1)	Caribbean Natural Resources Institute (5)
Couva Village Council (1)	Caribbean Forest Conservation Assoc. (8)
Debe Residents Association (2)	Caribbean News Media (5)
Assoc. of Professional Engineers (7)	Caroni Bird Sanctuary (4)
Environment Tobago (1)	Center for Environment and Resource Studies (5)
Fishermen and Friends of the Sea (10)	Central Environmental Youth Group (1)
Friends for Conservation (1)	Citizens for the Environment (4)
La Brea Residents Action Group (1)	Port-Of-Spain Businessmen Assoc. (1)
Lange Park Residents Association (1)	Princes Town Residents Assoc. (1)
Mayaro Environmental Watch Group (2)	San Raphael Village Council (2)
Nariva Swamp Action Group (1)	South Point Environmental Group (6)

Southern Farmers Cooperative (1)
Sugarcane Farmers Association (1)
Talparo Village Residents Assoc.(1)
Tamana Residents Association (1)
The Cropper Foundation (7)
Teachers for Environmental Awareness (1)
Trinidad and Tobago Agricultural Society (6)

Value Chain Stakeholders Group

BP Trinidad and Tobago (3)
Caribbean Industrial Research Institute (7)
Caribbean Safety Products (5)
Caribbean Steel Mills (6)
Clico Insurance Limited (3)
Eco Engineering (7)
Engineering Institute of Trinidad & Tobago (4)
EnviroCare Limited (5)
Environment First Consultants (4)
EPAS Consultants (6)
Exxon Mobil Inter Americas (2)
First Citizens Bank (2)
General Earthmovers Limited (4)
Green Engineering Ltd. (4)
Hess Petroleum (1)
Institute of Marine Affairs (4)
Labor and Waterfront Workers Trade Union (3)
National Oil Workers Trade Union (4)
National Petroleum Marketing Company (4)

Government Stakeholders Group

Environmental Management Authority (36)
Ministry of Energy/Energy Industries (24)
Trinidad & Tobago Bureau of Standards (11)
Chemicals Inspectorate (4)
San Fernando Public Health Office (5)
Ministry of Works and Transport (8)
Chaguanas Borough Council (2)
Health Inspectorate – North (5)
Ministry of Labor (16)
City of Port-of-Spain (4)
Industrial Development Corporation (2)
Small Business Development Company (5)
Ministry of Agriculture & Marine Affairs (9)
National Insurance Board (1)

Tropical Re-Leaf Foundation (1)
Trust for Sustainable Livelihoods (6)
UWI Biological Society (8)
Wildlife Trust (3)
Youth in Action (2)
Sea Scouts Association (1)

Neal and Massy Energy Services (2)
Oil Mop Services (3)
Petroleum Company of Trinidad & Tobago (4)
Phoenix Park Group (3)
Plipdeco (4)
Port Authority (3)
Sagicor Insurance Limited (2)
Sasha Cosmetics (6)
Sol Petroleum (1)
Solid Waste Management Company, Ltd (3)
Trinidad and Tobago Electricity Commission (3)
Trinidad and Tobago Petroleum Limited (3)
Trinidad Bulk Distributors (4)
Tropecol Limited (4)
Tropical Shipping (1)
Unit Trust Corporation Trinidad & Tobago (3)
UWI, Faculty of Engineering (2)
University of Trinidad and Tobago (3)
Valero Oil (1)

Table 3. 16 Item Scale Used to Measure Corporate Environmentalism of Firms

<i>Corporate Environmentalism Scale</i>		<i>Factor Loading</i>
<i>Question Items</i>		
1	Firm makes a concerted effort to make every employee understand the importance of environmental preservation.	0.35
2	Firm has a clear policy statement urging environmental awareness in every area.	0.82
3	Environmental preservation is a high priority activity in the firm.	0.84
4	Preserving the environment is a central corporate value in the firm	0.79
5	The financial well being of the firm does not depend on the state of the natural environment.	0.75
6	The firm has a responsibility to preserve the environment.	0.79
7	Environmental preservation is vital to the firm's survival.	0.76
8	The firm's responsibility to its customers, stockholders, and employees is more important than its responsibility towards environmental preservation.	0.72
9	The firm has integrated environmental issues into its strategic planning process.	0.85
10	In the firm, "quality" includes reducing the environmental impact.	0.83
11	The firm links environmental objectives with other corporate goals.	0.81
12	The firm is engaged in developing products and processes that minimize environmental impact.	0.82
13	Environmental issues are always considered when new products are developed or new services offered.	0.83
14	The firm emphasizes the environmental aspects of its products and services in advertising.	0.85
15	The firm's marketing strategies for products and services have been influenced by environmental concerns.	0.87
16	In the firm, product-market decisions are always influenced by environmental concerns.	0.79
Cronbach's alpha		0.94

Independent variable measures. *Industry association membership:* Coded as a dummy variable equal to one if a firm is a member of an industry association and zero if it is not. *American Chamber of Commerce of Trinidad and Tobago membership:* Coded as a dichotomous variable equal to one if the firm was a member of the American Chamber of Commerce of Trinidad and Tobago and zero for those that were not members. *Trinidad and Tobago Chamber of Commerce membership:* Coded as a dummy variable equal to one if the firm was a member of the Trinidad and Tobago Chamber of Commerce and zero for those that were not members.

Control variable measures. The selection of control variables was based on the most prevalent causal variables included in previous studies of corporate environmentalism (Christmann 2004). *Firm size:* Was measured as the natural logarithm of the number of firm employees. According to standard ordinary least squares regression practice, the natural logarithm was used to normalize firm size (Greene 2000). *Industrial location:* Coded as a dummy variable equal to one if the firm facilities were located inside of an export processing zone and zero otherwise. *Joint venture with foreign partners:* Recorded as the percentage of firm shares held by foreign interests. *Joint venture with State partners:* Recorded as the percentage of firm shares held by the state or state interests. *Foreign market dependence:* Recorded as the percentage of sales or services done in North America, Europe, and Japan in the last fiscal year. *Community location:* was proxied using a dummy variable equal to one if the firm was within a two mile radius of an urban community and zero otherwise.

Statistical analysis techniques

To test our hypothesis we used a two-stage modeling process that controlled for self-selection bias in the evaluation of voluntary choices (Heckman 1978). Heckman's two-stage technique has been widely used to evaluate environmental and economic benefits generated by environmental programs (Arora & Cason 1996; Hartman 1988; Khanna 2001; Khanna & Damon 1999; Rivera 2002; Welch, Mazur, & Bretschneider 2000). Controlling for self-selection bias is necessary because firms that anticipate more benefits from joining an industry association are expected to be more proactive (Hartman 1988; Heckman 1978; Khanna & Damon 1999; Maddala 1986).

In the first stage of the analysis, two probit regression models identify independent variables, X_i , significantly related to membership in each of the two industry associations: the American Chamber of Commerce of Trinidad and Tobago (D_{i1} ; model 1) and membership in the Trinidad and Tobago Chamber of Commerce (D_{i2} ; model 2) (Khanna & Damon 1999; Maddala 1986). These probit regressions are also used to estimate the probability of participation in each respective industry association: the American Chamber of Commerce of Trinidad and Tobago (P_{i1}) or Trinidad and Tobago Chamber of Commerce (P_{i2}). The probit regression equation model for the American Chamber of Commerce of Trinidad and Tobago is outlined below:

$$D_{il} = d + a_i X_i + e_i; (1)$$

Where:

D_{il} = participation in American Chamber of Commerce of Trinidad and Tobago

d = Regression constant term

X_i = Independent variables (Firm size, industry sector, export dependence, joint venture status)

a_i = Regression coefficient for independent variable X_i

e_i = random error term

In the second stage of the analysis, an ordinary linear regression model is used to examine the association between firms' corporate environmentalism (Y_i) and their probability of participation in each of the different industry associations – the American Chamber of Commerce of Trinidad and Tobago (P_{i1}) and Trinidad and Tobago Chamber of Commerce (P_{i2}). The inclusion of these independent probability of participation variables also allows control for self-selection bias in the estimation of the ordinary least squares regression model (Khanna and Damon 1999; Maddala 1986).

$$Y_i = a + b_i X_{2i} + c_i P_{i1} + c_i P_{i2} + e_{2i}; (2)$$

Where:

X_{2i} = Independent variables (IA membership, firm size, export dependence, joint venture status, location, and community)

P_{i1} = Probability of participation in American Chamber of Commerce of Trinidad and Tobago

P_{i2} = Probability of participation in Trinidad and Tobago Chamber of Commerce

e_{2i} = random error term

The error terms are expected to be correlated because they involve measurement error and unobserved factors associated with industry association membership and corporate environmentalism.

Results and Findings

Descriptive results

The response rate to the survey was 45.2 percent resulting in a final sample of one hundred and thirty one oil and gas and chemical sector firms. Seventy four percent of firms in the final sample were members of industry associations. More specifically, 48 percent of firms were members of the American Chamber of Commerce of Trinidad and Tobago and 32 percent were members of the Trinidad and Tobago Chamber of Commerce. Descriptive statistics cross tabulated by industry association membership and other predictive variables are presented in Table 4.

Table 5 below reports the correlation matrix which, as expected, provides initial evidence to suggest that industry association membership is significantly associated with stronger corporate environmentalism ($r = .33$; $p < .01$). American Chamber of Commerce of Trinidad and Tobago membership is also significantly associated with stronger corporate environmentalism ($r = .50$; $p < .01$) as is Trinidad and Tobago Chamber of Commerce membership. To check for possible multicollinearity problems, we estimated condition indices and variance inflation factors. These results did not suggest that such problems arose (Agresti & Findlay 2000; Belsley, Kuh & Welsch 1980).

Table 4. Descriptive Statistics

		Industry Association Nonmembers	Industry Association Members	American Chamber Members	Trinidad and Tobago Chamber Members
<u>Number of Firms (%)</u>					
Total Firms: 131(100%)		34(26%)	97(74%)	64(48%) ^a	42(32%) ^b
<u>Dummy Variables: N (%)</u>					
Community type	Urban	8(6.1)	33(25.1)	40(30.5)	28(21.4)
	Rural	26(19.8)	64(48.9)	24(18.3)	14(10.7)
Industrial location	In Indust. Park	19(14.5)	57(43.5)	40(30.5)	26(19.8)
	Outside Indust. Pk.	15(11.5)	40(30.5)	24(18.3)	16(12.2)
Industry sector	Oil and gas	16(12.2)	65(49.6)	50(38.1)	34(26)
	Chemicals	18(13.7)	32(24.4)	14(10.7)	8(6.1)
<u>Continuous Variables: Mean (Std. Dev.)</u>					
Corporate environmentalism (%)		46.8(12.6)	56.8(12.9)	61(11.6)	52.6(12.6)
Foreign joint ownership (%)		11.9(25.8)	18.3(26.6)	21.7(28.7)	24.9(29)
Foreign market dependence (%)		10.9(22.8)	22.5(33.5)	29.1(37)	30.1(39.5)
Size of firm (no. of employees)		87.7(83)	155.8(125)	172.3(130.8)	198.2(136.3)
State joint ownership (%)		4.3(15.1)	6.5(16.5)	8(17.4)	7.2(17)

a + b does not sum to 97 firms but 106 since 9 firms are members of both Industry Associations

Table 5. Correlation Matrix

	CEP	1	2	3	4	5	6	7	8	9	10
Corporate environmentalism	1.00										
1 Industry sector	0.20*	1.00									
2 Log size of firm	0.44**	0.26**	1.00								
3 Industry association membership	0.33**	0.18*	0.29**	1.00							
4 American Chamber membership	0.50**	0.33**	0.32**	0.57**	1.00						
5 Trinidad and Tobago Chamber membership	0.27**	0.27**	0.37**	0.41**	0.41**	1.00					
6 Foreign market dependence	0.46**	0.19*	0.28**	0.16	0.30**	0.25**	1.00				
7 Foreign joint ownership	0.22*	0.14	0.09	0.11	0.19*	0.22*	0.1*	1.00			
8 State joint ownership	0.16	-0.02	0.09	0.06	0.13	0.05	0.27**	0.30**	1.00		
9 Industrial location	0.16	0.12	-0.01	0.02	0.10	0.07	0.16	-0.07	0.01	1.00	
10 Community location	0.14	0.11	0.16	0.09	0.15	0.04	0.04	0.06	0.02	-0.06	1.00

*p<0.05

**p<0.01

N=131

Probit regression (stage 1) results

Results of the probit regression (stage 1) are reported on Table 6 below. Findings indicate that dependence on foreign export markets is positively and significantly related to membership in the American Chamber of Commerce of Trinidad and Tobago ($p < .05$). This suggests that when firms are more dependent on foreign export markets for their survival, the probability is greater that they will become members of the American Chamber of Commerce of Trinidad and Tobago. This is expected since a core function of the American Chamber as an industry association, is to facilitate trade between local Trinidad and Tobago firms and the US. The US is the major trade partner of Trinidad and Tobago accounting for nearly half of all trade, thus local firms will potentially be at an advantage to access the US market through allegiance with the American Chamber of Commerce of Trinidad and Tobago. Probit Model 2 findings indicate that joint venture ownership with a foreign firm is positively and significantly related to membership in the Trinidad and Tobago Chamber of Commerce ($p < .05$). This suggests that when firms are governed by an ownership structure consisting of a foreign-local joint venture, they are more likely to become Trinidad and Tobago Chamber members. Joint venture researchers point out that firms attempting to penetrate developing country markets usually find it useful to partner with local firms in order to better understand local operating conditions and increase the likelihood of success (Vachani 1995; Blumentritt 2003; Kogut & Kulatilatka 1994). By extension, it would be advantageous for such joint venture firms to become involved in local

industry associations such as the Trinidad and Tobago Chamber of Commerce which is the most prominent such association.

Table 6. Results from Probit Regression Analysis (Stage 1)

	Model 1 (Prob. AMERICAN CHAMBER member)	Model 2 (Prob. TRINIDAD & TOBAGO CHAMBER member)
Constant	-2.15 (0.63)	-4.02 (0.87)
Industry sector	0.68 (0.25)	0.62 (0.29)
Log size of firm	0.31 (0.14)	0.61 (0.17)
Dependence on foreign exports	0.01*(0.00)	0.01 (0.00)
Ownership: Joint venture with foreign firm	0.006 (0.01)	0.01* (0.01)
Ownership: Joint venture with state firm	0.003 (0.01)	-0.001 (0.01)
N	131	131
-2logL	181.54	164.36
Chi sq for covariates	150.32***	130.64***
% correctly classified	77.3	78.1

^ Prob<0.10; * prob<0.05; ** prob < 0.01; *** prob <0.001

Standard errors are in parentheses

Ordinary least squares (stage 2) regression results

Model 3 reported in Table 7 below displays the results of the linear regression analysis modeling corporate environmentalism. Findings indicate that firms with membership in the American Chamber of Commerce of Trinidad and Tobago are positively and

significantly ($p < .05$) related to stronger corporate environmentalism. Firms with membership in Trinidad and Tobago Chamber of Commerce have a negative but non-significant relationship with corporate environmentalism. These results provide support for the Hypothesis 1 argument that firms with membership in foreign originated industry associations originally established in advanced industrialized countries (like the American Chamber of Commerce of Trinidad and Tobago) are more likely to exhibit stronger corporate environmentalism than firms with membership in local industry associations established in developing countries (like the Trinidad and Tobago Chamber of Commerce).

Table 7. Results from OLS regression analysis (Stage 2)

	Model 3	
Constant	24.57	(7.64)
Log Size of Firm	3.73*	(1.87)
Prob. Firm has American Chamber membership	25.38*	(11.96)
Prob. Firm has Trinidad & Tobago Chamber membership	-10.97	(15.54)
Ownership: Joint venture with foreign firm	0.06	(0.05)
Ownership: Joint venture with state firm		
Industrial location	3.88^	(2.09)
Community location	2.03	(2.24)
N	131	
F-value	9.37***	
R squared	0.31	
Adjusted R squared	0.28	

^ Prob<0.10; * prob<0.05; ** prob < 0.01; *** prob <0.001

Standard errors are in parentheses

Discussion of results

This study indicates that the institutional pressures exerted by the American Chamber of Commerce of Trinidad and Tobago appears more likely to promote stronger corporate environmentalism among its member firms than the pressures produced by the Trinidad and Tobago Chamber of Commerce. Based on field observations, the factors that may contribute to this dichotomy are as follows. The American Chamber of Commerce of Trinidad and Tobago appears to have much broader membership than the Trinidad and Tobago Chamber of Commerce in terms of foreign, locally owned, and joint foreign-local owned firms, which may lead to more diverse collaborations, information exchanges, and discussion opportunities. Also, of both industry associations the American Chamber exhibited larger and stronger international networking relationships than the Trinidad and Tobago Chamber, especially with respect to the North American markets. The American Chamber of Commerce of Trinidad and Tobago network includes long-lasting linkages with foreign firms, experts, and partner associations in North America and Europe while the Trinidad and Tobago Chamber of Commerce network was not as institutionalized. This allows the American Chamber to provide its member firms with more cutting edge advice, exposure, and learning opportunities; factors that are critical for successful adoption of environmental management practices (Collins & Roper 2005). Additionally, although there has been a burgeoning of locally founded industry associations such as the Trinidad and Tobago Chamber of Commerce, it is taken for granted in the country that the American Chamber of Commerce of Trinidad and Tobago is the leading organization representing the widest business interests. This high visibility and reputation allows American Chamber of Commerce to have regular and easier access

to top level policymakers and prestigious national forums on environmental protection matters. Simultaneously, the American Chamber of Commerce's high visibility increases the environmental protection expectations and monitoring of its members by multiple stakeholders, thus pushing them to strengthen their corporate environmentalism. One cannot also dismiss that peer reputation effects within the American Chamber may be greater than in the local Chamber and this has been shown to be a strong motivator of environmental performance (May, 2005).

Finally, the findings of this study highlight the often repeated quotation that "*actions speak louder than words.*" While the American Chamber of Commerce of Trinidad and Tobago does not require member firms to sign on to a code of conduct with specific environmental requirements as does the Trinidad and Tobago Chamber of Commerce, it is the American Chamber's members that appear to be more environmentally responsible. This suggests that the numerous year round environmental forums, dialogues, seminars, annual conference, and guest speakers promoted by the American Chamber may be better tools for aiding members to improve their corporate environmentalism than the pressure exerted on Trinidad and Tobago Chamber of Commerce members to sign a code of conduct that does not involve penalties for its violation. The creation of a strictly-voluntary code of conduct may be viewed by industry associations as a tool to encourage their members to improve their environmental protection practices. Yet, these strictly-voluntary codes (with no sanctions and no independent oversight) appear to have a poor record in promoting enhanced corporate environmentalism (Delmas & Toeffel 2004; Rivera et al. 2005).

Conclusions

This study contributes to the public policy and administration literature by providing new empirical evidence about the relationship between industry associations and corporate environmentalism. We also contribute to the small body of work examining institutional factors associated with corporate environmentalism in smaller economies in the developing world. Current emphasis on large developing countries such as China, India, and Mexico may be of little relevance to the unique environmental vulnerabilities and economic context of smaller emerging economies that have much to lose in terms of environmental quality if this challenge is not taken up by business and environmental policy scholars.

We posit that industrialized country originated industry associations may be enlisted as effective public policy motivators to promote environmental protection in emerging economies. This is particularly important in most such jurisdictions where governments usually lack strong capacity to enforce environmental regulations. Yet, while industry associations may have been identified as potential drivers of stronger corporate environmentalism, not all industry associations are equal in this regard. Surprisingly, little is known about the specific types of industry associations that may be able to actually promote stronger corporate environmentalism on their membership.

Our cross-sectional study of Trinidad and Tobago's industry associations suggests that firms with membership in industry associations in general are not more likely to exhibit stronger corporate environmentalism than firms that are non-members. However, our findings indicate that members of an industrialized country originated industry association such as the American Chamber of Commerce of Trinidad and Tobago are

more likely to be associated with stronger corporate environmentalism than members of the local industry associations. Industrialized country originated industry associations appear to exert stronger normative and mimetic institutional pressures that promote enhanced corporate environmentalism because they may: have more access to information about the latest environmental management technology and practices; be more aware of the newest and more stringent environmental preferences and standards developed in industrialized countries; be more visible and thus receive stronger demands and oversight to push their members to show exemplary environmental protection conduct; and be more able to diffuse new environmental protection technologies and demands by taking advantage of their central position within their network of members.

Finally, it is important to highlight an important limitation when considering our findings. This study relied on a survey of stakeholders to measure corporate environmentalism. Our analysis is not based on actual environmental performance data such as air or water pollution levels but on the perception of performance that stakeholders hold based on observations and interpretations of the operations of each firm. When actual environmental performance data becomes available, future research can re-examine these relationships.

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