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## Enforcement Styles Among Environmental Protection Officials in China

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### ABSTRACT

Researchers examining regulatory enforcement have found that enforcement styles tend to be contextually determined in Western countries, which has resulted in a divergence in regulatory approach at both the national and local levels. Given the dearth of regulation research in non-democratic regimes, this paper makes an initial attempt to fill the gap by studying the impact of regional variations in regulatory enforcement in China. Accordingly, the effects of external support and organizational factors on the preferences for enforcement styles of environmental officials in three Chinese regions were examined. It was found that the strength of these influences on enforcement style dimensions is more variable than was anticipated. Generally, the patterns of relationships for Guangzhou and Chengdu were similar, while those for Dalian appear to reflect its unique environmental, economic and political conditions. Public support appears to promote several dimensions of enforcement style (i.e., education, prioritization, coercion) in Guangzhou and Chengdu; however, in Dalian the influence of government was greater than that of public support. The effects of internal factors were even more variable and probably reflect unique characteristics and priorities within each agency. Overall, the results suggest that caution is warranted when interpreting current findings about China that have used samples from a single region and that enforcement agency directors in nondemocratic regimes must take into account a complex array of contextual factors in attempting to promote a particular style of enforcement.

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Although its citizenry historically maintained small individual ecological footprints, the extent of environmental degradation during the period of “Great Leap Forward” and “Cultural Revolution” was substantial due to the interaction of several factors. First, there was heavy population density in many regions. Second, huge public works projects were undertaken with little or no environmental or social forethought (e.g., dam construction, factory sitings, coal and mineral extraction). Third, many utilities and other factories utilized heavily polluting technologies. Finally, public awareness of this loss of natural capital was restricted and those directly affected had little recourse.

Unfortunately, the market reforms begun under Deng Xiaoping have mostly served to exacerbate this destruction of natural capital (Smil, 1993; Edmonds, 1994). The impressive gains in gross domestic product (GDP) have substantially enlarged the ecological footprints of China’s urban population, while industrial production is now serving vast export markets. The result has been a huge increase in energy demand and pollutants, and a staggering accumulation of solid wastes. As a consequence, China now faces a growing litany of environmental problems embracing such broadly ranging issues as chromosome damage from toxic metals, desertification, soil erosion, macro- and micro-climatic changes, collapsed fish stocks, loss of biodiversity, debilitating levels of air pollution in many urban areas, acid rain, and water shortages.

Since the mid-90s authorities have made earnest efforts to mitigate this damage (Lo and Leung, 1998). Numerous new laws and regulations have recently been passed (Palmer, 1998), various market-based approaches have been introduced (i.e., the reduction of subsidies, user fees, and tradable permitting schemes), and educational and awareness programs have been launched. So far, however, the results of these efforts have been mixed. On the one hand, it is clear that in specific contexts, the command and control political structure in China can lead to a rapid implementation of programs (e.g., the elimination of harmful two-cycle microtaxi or “*miandi*” and the closure of high polluting factories in Beijing). At the same time, a number of institutional and contextual obstacles seriously limit the frequency of such success stories, especially in terms of nation-wide improvement. Sims (1999) highlights China’s “fragmented” bureaucracy, political obstruction of the more powerful ministries, and a shortage of resources as some of the primary culprits. As a result, government efforts alone are expected to have less impact on most environmental problems than might have been hoped for (Lo and Tang, 1994; Ross, 1988; Sinkule and Ortolano, 1995; Tang, Lo, Lo and Cheung, 1997). Indeed, in most cases, areas of real progress have been overwhelmed by economic growth.

Although much has been written about regulatory enforcement in

China (e.g., Chan, Wong, Lo and Cheung, 1995; Sinkule and Ortolano, 1995; Sims, 1999; Lo and Leung, 2000; Ma and Ortolano, 2000), two factors have been largely overlooked in the discussion on how to improve China's environment. First, most studies have focused on the policy- or organization-level, thereby overlooking the enforcement officials themselves. Because the enforcement officials are the foot soldiers in this "war", they must adapt their own personalities and preferences to local conditions in order to obtain compliance from a reluctant (and often cash-strapped) enterprise. The second factor involves the likelihood of regional variations across regions in China. To date, there have been very few empirical studies that have drawn data from multiple regions. Because of the power of local influences on environmental regulation, we suspect that it may be much more difficult to generalize findings than may be widely assumed.

Accordingly, the purpose of this study is to examine the relationship among various proposed influences on the enforcement style dimensions of environmental enforcement officers in mainland China. In particular, the influences of external support for environmental protection (i.e., government and public support) and various organizational influences (role clarity, supervisory support and resource adequacy) are examined. Although the level of analysis in this study is at the level of enforcement officials, the generalizability of these influences across three contrasting municipalities is also of considerable interest.

### *Background*

While comparative studies on environmental governance have focused mostly on Western industrial economies, there has been a growing interest in researching local environmental enforcement in developing countries and transition economies (Smith, 2000; Dasgupta, 2000; Stulgrouss, 1999; Tang, Prahash and Tang, 1998; Bluffstone and Larson, 1997). Much of this work has focused on China (e.g., Ross, 1988; Chan, *et al.*, 1995; Tang *et al.*, 1997; Lo, Yip and Cheung, 2000; Sinkule and Ortolano, 1995; Jahiel, 1997; Ma and Ortolano, 2000), where the conflicts between economic development and environmental protection are often exceptionally pronounced. Studies dealing with enforcement style dimensions have revealed preliminary findings indicating that China's command and control approach to regulatory enforcement generally tends to be more formal, discretionary, and non-confrontational than that of most other countries (Lo *et al.*, 2000). However, it is important to observe that such generalizations have typically been drawn from either case studies or other highly delimited samples. As a

consequence, the notion of a “national style” of enforcement is currently more an assumption than an empirical conclusion.

In the study of regulatory enforcement dimensions, scholars have generally focused on the factors that influence either regulatory agencies or their officials (Hawkins, 1984; Yeager, 1993; Kagan, 1994; Gormley, 1988). Such studies suggest that enforcement *agencies* tend to be more strongly influenced externally (e.g., by regulatory legal design and political climate), while agency officials are susceptible to *internal* factors (e.g., leadership, availability of resources, and administrative control). Beyond these broad generalities, however, a consensus regarding specifics has been elusive. This deficiency would extend not only to the relationship between influences and enforcement styles, but also to such matters as mediating variables, effect sizes, and directionality. For example, it was found that in the enforcement of CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act of 1980), some US EPA regional offices have adopted very legalistic approaches, while others have approached enforcement in a more conciliatory manner (Church and Nakamura, 1993). As external influences probably vary by jurisdiction and internal factors by agency, we anticipate ample contextual variation. Moreover, current studies tend to suggest that regional variations in enforcement style may be particularly great in China.

#### *Enforcement Style Dimensions*

A major theme of the regulatory enforcement literature has been to identify the institutional forces that shape the enforcement style dimensions of agencies. With the focus on different dimensions of regulatory enforcement, these studies have indicated that enforcement style tends to be multi-dimensional (see Gormley, 1998, in particular). In the regulatory process, a series of four dimensions can be identified in different stages. The first one is enforcement pressure on regulatory agencies in the onset of regulatory enforcement, which refers to *external influence*. There is strong empirical support for the argument that the regulatory behaviours of enforcement agencies (and their officials) may be influenced by political leaders and their constituencies (Frank and Lombness, 1988; Hutter, 1989; Scholz, Twombly and Headrick, 1991; Wood, 1988; Wood and Waterman, 1991). It follows that external influence may have a mixed impact on regulatory outcomes. For example, Scholz, Twombly and Headrick (1991), in a study of the influence of local partisan politics on the local enforcement efforts undertaken by field offices of the U.S. Occupational Health and Safety Administration (OSHA), found that while local political influence helps

to ensure that local offices of federal agencies are sensitive to differences in local conditions and preferences, this local political influence can also potentially undermine the impartiality and efficiency of enforcement. In a comparative analysis of regulation, Gormley (1997, 1998) ascribed the divergence in regulatory enforcement of child care regulations in the four states of Colorado, North Carolina, Oklahoma, and Pennsylvania mostly to variations in local political and administrative support.

A second dimension refers to *prioritization*. Researchers in regulatory enforcement have consistently argued for the importance of setting priorities in enforcement. This recognizes that such regulations are often overly inclusive in scope or overly ambitious relative to the resources appropriated. Some argue for the need to focus on major categories of violations (Bardach and Kagan, 1982); others argue for the need to allocate efforts to cases that have a historical record of violations or to entities with higher risk (Gary and Scholz, 1991; Scholz, 1991, 1994). Implied in this results-oriented approach is the need for regulatory agencies to prioritize their strategies, such as targeting the worst offenders, in order to achieve overall, superior results. Here, agency discretion is sorely needed in conducting prioritization in the form of selective enforcement. Such priorities are usually set in light of government preferences, public interests, the environmental performance of enterprises, agency capacity and budget constraints (Sparrow, 2000; Kagan, 1994: 405).

The third dimension of enforcement style is *formalism*. In earlier literature on regulatory enforcement, much of the focus has been on the legal basis of regulatory control systems. The general view seems to favour a formal regulatory regime that exhibits a high degree of legalism in enforcement actions. Here, formalism refers to adherence to rigid legal requirements in regulatory enforcement. Formalism may be expressed in the implementation deadlines, environmental standards and levels of penalties, and in the reluctance to consider any cost-benefit considerations (Hawkins, 1984; Kagan, 1994). Arguments in favour of formalism are usually couched in terms of reducing discretionary administration in the interests of preventing corruption, enhancing deterrence, promoting equity or to empower the public (Bardach and Kagan, 1982; Gunningham, 1987; Langbein, 2002). On the other hand, a strict legalistic approach can easily be counterproductive should it arouse hostility or otherwise frustrate cooperation from the regulated entities (Hawkins, 1984; Frank and Lombness, 1988; Hupples and Kagan, 1989; Yeager, 1993; Gormley, 1997).

Finally, there is *coercion* and *education*, which refers to the agencies' exercise of regulatory control actions in their interaction with violators.

The body of literature on comparative regulatory enforcement in Western countries has identified two contrasting approaches – adversarial and cooperative – adopted by regulatory agencies in dealing with law-breakers (Lunqvist, 1980; Badaracco, 1985; Brickman, Jasanoff and Ilgan, 1985; Vogel, 1986; Heidenheimer, Hecllo, and Adams, 1990; Richardson, 1992; Weale, 1992; Weale, Pridham, William and Porter, 1996). The adversarial approach stresses the coercion of law manifested in a strong propensity to impose, or signal the imposition of, sanctions for non-compliance. The advocacy of coercion is usually grounded in the view that ‘regulated enterprises respond only to the threat of legal sanctions’ (Kagan, 1994: 386). Prosecution and issuance of corrective orders to non-compliance enterprises are thus the order of the day. In comparison, the cooperative approach emphasizes the educational function of the law, seeing the potential for using “incentive-based” or “voluntaristic” methods to induce environmentally responsible behavior (Press and Mazmanian, 2000). Research in other regulatory areas also points out how government agencies can achieve regulatory compliance by providing private parties with communication channels and bargaining areas, as in the case of occupational safety, so that they can overcome collective action dilemmas among themselves (Scholz and Gray, 1997). Based on these considerations, it is often argued that regulators can potentially increase compliance by educating both the regulated and the public about rules and their social benefits (see also May and Winter, 1999). This may be particularly effective if they work closely with enterprises that are first-time violators on showing them the proper ways to comply (Hawkins, 1984). Although it was argued that a cooperative style tends to be more effective than an adversarial style in achieving regulatory compliance (Scholz, 1984; Ayres and Braithwaite, 1991; Gormley, 1992), more recent empirical studies suggest that the threat of sanctions may be a pre-condition for a cooperative approach (Bardach and Kagan, 1982; Ayres and Braithwaite, 1992; Harrison, 1995).

However, these enforcement practices are not mutually exclusive, and regulatory agencies and their officials tend to adopt a combination of them in achieving compliance in the enforcement process. For example, comparative studies on environmental governance found that the regulatory style employed by environmental agencies in the United States is comparatively more formal, rigid and adversarial under strong external influences. On the other hand, the style adopted by those in Britain and Sweden is relatively informal, discretionary and collaborative, with less of a tendency to be shaped by external influences (Hoberg, 1986; Vogel, 1986; Kagan and Alexrad, 2000; Richardson, 1992; Weale *et al.*, 1996; Kagan, 2001). These variations in regulatory style

have been attributed to differences in basic constitutional structures, regime types, and cultures (Weale, O’Riordan, and Kamme, 1991; Weale, 1992; Weale *et al.*, 1996; Badaracco, 1985; Brickman *et al.*, 1985; Kelman, 1981; Lundqvist, 1980; Lo and Tang, 1994; Vogel, 1986). Finally, there are no conclusive findings on which style is more effective (Shapiro and Rabinowitz, 1997: 720–721). While regulation studies have provided some evidence to show that less adversarial styles often are more effective (Wallace, 1995; Scruggs, 1999; Verweij, 2000; Kagan and Alexrad, 2000), there has been an increasing belief that more legalistic and coercive dimensions could improve compliance rates (del Frate and Norberry 1993; Gunningham, Norberry and McKillop, 1992; Darrochi and Harrison, 1999). Generally, while style does appear to influence success in institution building, the research provides much less clarity about the relationship between enforcement style dimensions and actual improvement in environmental quality (Kagan, 1994: 389–390).

#### *The Antecedents of Enforcement Style Dimensions*

In contrast to many other environmental professionals, what sets enforcement officials apart is that much of their work occurs in the field, well away from the purview of their superiors. Although they may be trained in procedures and in how to interact with the regulated, and although many of the institutional forces are directed at the larger agency, such field work affords them room for flexibility in determining how best to get their job done within these influences and constraints (Bardach and Kagan, 1982; Diver, 1980; Hawkins, 1984; Kagan, 1989; Sparrow, 2000: 238–254). In particular, flexible enforcement is positively valued as the craft of responsive regulation.

At the same time, this administrative discretion has given rise to the apprehension that this induces agency capture and breeds corruption. Researchers generally hold that the danger that regulators will sympathize with the non-compliant behaviour of enterprises and subscribe to corrupt acts will increase when they are granted substantial autonomy (Ayers and Braithwaite, 1992; Scholz, 1994: 448–543; Sparrow, 2000). Such risks are exceptionally high in China where environmental agencies are well-known for their “pro-growth mentality” (Chan *et al.*, 1995) and bureaucratic authorities have been notorious for their corrupt practices (Kwong, 1997; Lo, 1999; Miles, 2000; Huang, 2001). Managing discretionary enforcement to guard against capture and corruption has thus emerged as an important topic of administrative control in the practice of the cooperative approach (Hawkins, 1984). A progressive solution known as ‘tripartism’ – the empowerment of public

interest groups to take part in the regulatory process – was advanced by Ayers and Braithwaite (1992: 54–100).

Another characteristic of an environmental enforcement official's job is that his/her presence in the inspected organization is seldom a welcome event. While most site visits may be accepted with a mixture of tolerance and cooperation, the best outcome for the management of the enterprise is simply that the enforcement official conducts the inspection and leaves. When violations are cited, such visits may easily lead to disagreement, confrontation and frustration (Hartford, 1978; Hawkins and Thomas, 1984; Kambhu, 1990; Gunningham *et al.*, 1992; Darrochi, and Harrison, 1999). Indeed, for the businessman, the stakes in China can be especially high as, more recently, violations have led to disproportionately high fines, jail terms and outright closure (Jie, 1994; Du, 2000).

Both of these factors together would suggest that environmental protection officials have ample flexibility to develop individual approaches to cope with the stress of the job in accordance with their own personality and preferences. In this study, which attempts to account for some of the variance in enforcement style dimensions, we will first look at external support for environmental protection. Subsequently, we will examine organizational factors that provide support or clarity of purpose.

#### *External Influences*

One set of influences that will shape preferences among these various enforcement style dimensions are levels of external support for environmental protection. This is because levels of external support shape the legitimacy and power of enforcement officials in the field as they carry out their work (Hunter and Waterman, 1996; Helland, 1998a, 1998b). In China, such legitimacy derives from two primary sources – the government and the public.

*Government support for environmental protection.* Government support is critical in that it signals priorities, especially with regard to the position of environmental protection via-à-vis economic development and access to resources. In particular, government support for environmental protection is of paramount important in developing countries where environmental agencies are weakest (World Bank 1992; Hardoy, Mitlin, and Satterthwaite, 1992; Bartone, Bernstein, Leitmann and Eigen, 1994; O'Connor, 1994). A clear mandate for environmental protection that is also understood by the business community may also provide the enforcement official with more enforcement style options, especially in prioritizing major violators. In contrast, an environmental official who

is lacking in government support would be expected to seek refuge in a formalistic (i.e., bureaucratic) style, manifested in a strict adherence to the book or in the generation of meaningless paperwork in the course of regulatory enforcement – a form of what some authors have called ‘retreatism’ (Kagan, 1978: 94–6, 1994: 388; Braithwaite, 1993). Moreover, to the extent that the environmental official perceives that government is standing behind his enforcement efforts, he or she is less likely to be swayed by external influences.

*H1a: The enforcement style dimensions of prioritization and education will be positively related to government support.*

*H1b: The enforcement style dimensions of formalization, coercion and external influence will be negatively related to government support.*

*Public support for environmental protection.* Research findings on regulatory enforcement have, in general, suggested that an environmentally vigilant public shapes the enforcement style of a regulatory agency (Sabatier and Mazmanian, 1983; Scholz and Wei, 1986; Scholz *et al.*, 1991). Recent surveys indicate that environmental awareness is emerging in China’s urban cities as local residents are increasingly well informed about pollution problems and environmental degradation (Lo and Leung, 1998; Xi and Xu, 1998). Although press freedom in China is constrained regarding most topics with “political implications”, the press has been surprisingly open in reporting on environmental issues (Friends of Nature, 1998). Moreover, it was found that the press in coastal cities are relatively more open than in other areas of the country; for example, local newspapers in Shanghai and Guangzhou (Lo and Yip, 1999; Lo and Leung, 2000) have been particularly aggressive in disclosing serious cases of environmental violations. In addition, EPBs have begun to publish annual reports of their work in an effort to draw popular attention to pollution problems (Lo and Leung, 2000). Thus, the degree to which the public is informed about environmental problems, although uneven, has generally increased, as has the importance of public support for environmental protection. In a recent survey of managers in China, Fryxell and Lo (2001) found strong support for environmental protection and a recognition among most managers that investments in such technologies will improve economic conditions in the long run. In this context, environmental protection officials will perceive themselves as being legitimate public servants and as dealing with managers who have a modicum of appreciation for regulations.

Given this, how is public support likely to influence enforcement styles? We would anticipate similar relationships for government support. For example, with a perception of public support, we would expect the enforcement official to perceive a greater mandate for action and

additional “degrees of freedom” in enforcement. This should be manifested in a greater propensity to use the styles of prioritization and education. The use of more formal, bureaucratic practices or coercive approaches may also increase when the enforcement official perceives that it may work in his or her favour (Frank and Lombness, 1988; Gunningham, 1987). On the other hand, the relationship of public support on a reliance on external referents as an enforcement style is less clear (Kagan, 1994: 400–401). This is particularly the case in China where public support is highly disorganized in the absence of autonomous non-governmental organizations and pressure groups. While it could be argued, as before, that public support will diminish such influences, it seems more likely that public support will increase a reliance on external influences. This is primarily because the public – as broadly defined – includes sources of external influence (i.e., the business community and green groups). Consequently, such public support may, in some cases at least, either be granted as the result of such influence or with the expectation of it. This leads to the following pair of hypotheses:

*H2a: The enforcement style dimensions of external influences and education will be positively related to public support.*

*H2b: The enforcement style dimension of formalization and coercion will be negatively related to public support.*

#### *The Organizational Influences on Enforcement Style Dimensions*

Although environmental officials have ample flexibility in adopting various enforcement styles while in the field, they remain subject to numerous organizational factors that will also influence the style chosen (see Firestone, 2002).

*Administrative ambiguity.* To the extent that environmental officials perceive that they have insufficient clarity from agency administrators there will be little consensus on goals within the enforcement unit and across departments within the agency. This will undermine collaboration and promote isolation and, potentially, increase nonconstructive political behaviour (Durant, 1984: 311). In such a climate, the enforcement official is likely to seek refuge in bureaucratic rules and guidance from colleagues or other referent groups (Hawkins, 1984: 57–71). To the extent that colleagues or other groups are used as “style benchmarks”, the style preference should reflect whatever is locally popular. Whether administrative ambiguity leads to coercive styles is difficult to anticipate. On the one hand, such ambiguity may promote insecurity on the part of the enforcement official; however, it is possible that a less constructive environment within the agency and attendant

frustrations may “spill over” to influence the officials’ field-work. Administrative clarity – the opposite state – presumably promotes a style of prioritization. This leads to the following pair of hypotheses:

*H3a: The enforcement style dimensions of formalization and external influence will be positively related to administrative ambiguity.*

*H3b: The enforcement style dimensions of prioritization and coercion will be negatively related to administrative ambiguity.*

*Procedural ambiguity.* In addition, procedural confusion would be expected to influence enforcement styles by fostering dimensions that attempt to cope with a lack of clear rules (Hawkins and Thomas, 1984: 10–11; Kagan, 1994, pp. 394–395). Presumably a lack of clarity on means for enforcement could lead to increased attention to ends (i.e., goals). Although this could lead to prioritization and coercion, this may not be the case as procedural ambiguity and a lack of consensus on goals are likely to go hand in hand. Instead it seems more plausible that efforts to cope with such ambiguity would lead to a greater reliance on external sources and to frustrate the adoption of a formalistic style (Kagan, 1994, p. 395).

*H4a: The enforcement style dimension of external influence will be positively related to procedural ambiguity.*

*H4b: The enforcement style dimension of formalization and coercion will be negatively related to procedural ambiguity.*

*Resource inadequacy.* An inadequacy of resources available for enforcement will influence the choice of enforcement style dimensions by the imposition of constraints (Kagan, 1994, pp. 494–495; Wood, 1988). This may be particularly true for a constructive enforcement style such as education, which implies greater client interaction. In addition, insufficient resources should lead to greater prioritization, and possibly coercion, in order to better leverage what resources are available (Kagan, 1978; Wood, 1988; Gormley, 1997). Thus, it is hypothesized that:

*H5a: The enforcement style dimensions of prioritization and coercion will be positively related to resource inadequacy.*

*H5b: The enforcement style dimension of formalization and education will be negatively related to resource inadequacy.*

*Supervisory support.* Finally, at a more interpersonal level, environmental enforcement officials are likely to be influenced by their direct superiors (Hawkins, 1984: 51–71; Kagan, 1994, 405–410). As Hawkins (1984: 51) put it, “[e]ach area office is recognized to possess a special character which emanates from the personality and style of the area

officer who presides over it'. Clearly, the extent to which enforcement officials believe that their superiors will back them up should influence how they see their job and the risks they may be willing to take. This is likely to promote prioritization. However, beyond clarifying priorities, the style preference promoted by supervisory support is likely to be contingent on a particular style that is favoured by the superior (Kagan, 1994: 407), although Gormley (1997) suggested that regulatory officials without easy access to their immediate supervisors tend to take a more legalistic style. Thus, it would be difficult to predict, *a priori*, which particular dimensions are related to supervisory support. This leads to the following somewhat more tentative hypotheses:

*H6a: There is a relationship between enforcement style dimensions and supervisory support.*

*H6b: There is a negative relationship between enforcement style dimensions of formalization and coercion and supervisory support.*

### *Regional Differences*

The literature on environmental regulation suggests that enforcement style dimensions are shaped as much by the political climate as by considerations of their effectiveness in pollution control (Kelemen, 2000; Howlett, 2000; Harrison, 1995; Hebert, 1993; Vogel, 1993). Such institutional factors as concentration of power, national priority, public participation, court involvement, and the influence of non-governmental green groups have been identified as potential influences on a particular enforcement agency's approach to enforcement (Kelemen, 2000; Howlett, 2000; Knill, 1998; Vogel, 1993; Richardson, 1992; Weale *et al.*, 1991; Badaracco, 1985). This observation is not only valid at the national level but has also been empirically supported as regional differences within a nation contribute to variations in regulatory style among individual local jurisdictions (Kagan, 1994; Gormley, 1998; Kagan and Axelrad, 2000). Gormley (1998), in his recent study of child care regulations in four federal states, found that regulatory agencies and their inspectors have adopted different enforcement approaches because of divergent legal, political and administrative contexts in these states. Thus, the notion of national style appears to be an oversimplification.

There should be little question that this broad assertion is applicable in China, where the politics of regulation takes place mainly inside the local bureaucracy and can be shaped by exceptionally diverse parochial interests (Sinkule and Ortolano, 1995; Tang *et al.*, 1997; Lo and Leung, 2000; Ma and Ortolano, 2000). For environmental regulation in general, at the local level such interests may include: municipal leaders

(reflecting the mayor's particular policy priorities), various economic and industrial bureaus (usually favouring economic development over environmental protection), government bureaus (many owning or otherwise sponsoring polluting enterprises), and the environmental agency itself (which must rely almost totally on the collection of fees from the discharge of pollutants and other local sources to finance its operations).

Importantly, although there are formal mechanisms (i.e., meetings) in which these differences may be aired, more often this influence is applied through informal local networks (i.e., *guanxi*) that often serve to frustrate strict enforcement (Chan *et al.*, 1995; Lo and Leung, 2000). This informal process, together with the relatively inferior bureaucratic status of many local environmental agencies and a shortage of resources, suggest that environmental enforcement officials must be particularly creative in adopting an enforcement style that is appropriate to their local political, economic and organizational realities.

*H7: There will be regional differences in the strength of the relationships between external support and organizational factors with enforcement style dimensions.*

### *Methodology*

A survey methodology was chosen for this study. There were both practical and research specific reasons for this choice. The survey methodology permitted us to obtain a fairly large sample in the anticipation that some of the effect sizes may be modest, and to reach a large number of enforcement officials in each of the three cities that were chosen. Many of these officials spend a considerable amount of time in the field, and this permitted them to supply information at time that were most convenient for them. In addition, it would have been difficult to obtain primary or secondary archival sources for most of our measures. Practically speaking, such data are usually either unavailable or difficult to obtain in China.

### *Sampling Locations*

Our examination of the above hypotheses is based on the study of officials in environmental protection bureaus (EPBs) in three Chinese cities that all serve broader regions. The three cities included in this study are Guangzhou, Dalian, and Chengdu. In part, these cities were selected because the authors had contacts in the EPBs (i.e., such that they endorsed the study). Fortunately, however, these three venues are sufficiently different from each other so as to be more or less representative of Chinese in the larger sense. Guangzhou is the largest city in

the Pearl River Delta Region in southern China. It has achieved tremendous economic growth in the past two decades and, as a result, has suffered from serious pollution problems. Dalian is a coastal city at the southeastern end of the Liaodong Peninsula in northeastern China. It is reputed to have achieved significant economic growth while maintaining the status of being a green model city. Chengdu is an inland city located in the Sichuan Basin in southwestern China. It is known to have a strong aspiration to economic success, but has suffered from severe environmental degradation. These three cities represent a wide diversity of experiences in terms of economic development and environmental conditions. (Table 1)

#### *Data Collection*

The three surveys were conducted among officials in the municipal EPBs between April and November 2000. Each survey was administered with the endorsement and support of the respective EPB, which assigned a specific department to be in charge of the survey. These enforcement officials were from three areas within each EPB: (1) the administrative sections of the EPB, (2) the associated pollutant discharge supervision and management institutions, and (3) the subordinate district environmental protection bureaus that extend well beyond the city's official boundaries.

Responses were obtained from 605 officials in the three EPBs and their district EPBs out of 703 distributed, providing an overall response rate of 86%. In the case of Dalian, a total of 193 out of 233 officials completed and returned usable questionnaires (83%); in Chengdu, a total of 210 out of 220 officials did so (95%); and in Guangzhou, 202 out of 250 were returned (81%). These response rates are very high due to the fact that we obtained formal approval for the study and the endorsement of the EPBs in each city. This, in effect, communicated to all respondents that participation in this study was expected as part of their job duties. In addition, it is possible that a strong response rate could have been the result of having a sample that has previously been less subjected to surveys than in most Western contexts.

#### *Measurement*

*Enforcement Style Dimensions.* We used a total of 15 items to measure the five enforcement styles discussed earlier in the paper. Each item posed a statement about enforcement, on which the enforcement official indicated their agreement or disagreement on a five-point, Likert-type scale. From an exploratory factor analysis, we were able to identify

TABLE 1 *Comparison of Guangzhou, Dalian and Chengdu*

Municipality	Guangzhou	Dalian	Chengdu
<b>Dimension</b>			
<b>1. Geographical location</b>	The largest city in the Pearl River Delta Region of Southern China	A coastal city at the Southeast end of Liaodong Peninsula in Northeast China	An inland city in the Sichuan Basin in Southwest China
<b>2. Area</b>	7,434.6 km <sup>2</sup>	12,573 km <sup>2</sup>	12,300 km <sup>2</sup>
<b>3. Population</b>	6.5 million	5.2 million	10 million
<b>4. Economic Growth</b>	Over 10%/yr. over the last 2 decades 1999: GDP = 206 billion yuan; economic growth, 1998–1999: 13.3%	Over 10%/yr. over the last decade 1999: GDP = 100.3 billion yuan; economic growth, 1998–1999: 11.2%	10%/yr. over the last decade 1999: GDP = 119 billion RMB; economic growth, 1998–1999: 8.9%
<b>5. Urban Planning</b>	An old city with ineffective urban planning	Transformed from a heavily polluted industrial city to become reputed as a “green city” in China through effective urban planning. Recently selected by a number of “Hi-tech” Japanese and Korean firms for headquarters.	An historic inland city in China’s “western” region with ineffective urban planning.
<b>6. Conditions of Environment</b>	1. Serious water pollution – particularly bad in the Pearl River. 2. Serious air pollution from excessive vehicular emission and factories. 3. Excessive noise from a large number of construction projects running 24 hrs/day.	1. Mild air pollution from the use of coal and vehicular emissions. Effective wind dispersion. 2. Moderate water pollution from domestic sewage. 3. Moderate noise from heavy traffic. 4. Less litter than most Chinese cities. 5. Considered by many as the most environmentally progressive in China.	1. Serious air pollution from the use of coal and vehicular emission. Poor wind dispersion of pollutants. 2. Serious water pollution – especially in the Min River. 3. Excessive noise from heavy traffic and construction. 4. Acid rain.
<b>7. EPD performance</b> (as assessed by the State Environmental Protection Administration)	Ranked top 10 nationally between 1988 and 1994; but has slipped outside of this ranking since 1995.	Ranked top 5 since 1988 and has achieved the status of an eco-city since 1996.*	Has achieved a top 10 ranking since 1994. The highest rank was 6 in 1998.
<b>8. Similar Municipalities in China</b>	Characteristic of major cities in the coastal areas with strong pro-growth orientation (e.g. Beijing, Shanghai, Tianjin, Nanjiang).	Possibly unique in its environmental emphasis. Other cities in China with good environmental reputations and good urban planning include: Xiamen, Zhuhai, and Weihai.	Characteristic of major inland cities with strong pro-growth orientation and included within the “Go West” campaign (e.g., Lanzhou, Chongqing).

\*A total of six cities were awarded the status of a model city in environmental terms in China at an inaugural event in 1996. This number was increased to 11 in 1998, and these 11 cities did not compete for ranking in the annual assessment exercise.

This table was compiled by using information from the following government publications: *China Environment Yearbook 1990–1999* (Beijing: China Environment Yearbook Press); *Guangzhou Statistical Yearbook 2000* (Beijing: China Statistics Press, 2000); *Dalian Statistical Yearbook 2000* (Dalian: 2000); and *Chengdu Statistical Yearbook 2000* (Beijing: China Statistics Press, 2000).

five factors accounting for 63% of the variance among the items that corresponded to the anticipated structure. The fifth factor, however, did not have an eigenvalue greater than 1.0, which raised the question of whether or not it should be retained. Because this particular factor spoke to the enforcement style of “coercion” which is of particular interest in this context, and because items did not appear to cross-load on other factors, we decided to retain it while recognizing this particular scale’s limitations. These factor loadings, along with the wording of the items, are provided in Table 2.

Scales were formed by summing the items, as follows: 1) Five items formed a scale measuring *formalism* which emphasized strict and consistent adherence to regulations and procedures ( $\alpha = .71$ ); 2) Three items comprised a scale to measure the enforcement style of *prioritization*, which emphasized determination of the most important responsibilities and identification of the most important offenders ( $\alpha = .70$ ); 3) Two items formed a scale to measure the style of *education* which spoke to the education of the public and businesses ( $\alpha = .84$ ); 4) Three items formed a scale for *external influence* that spoke to how malleable the style was in complying to the interests of other parties ( $\alpha = .78$ ); and 5) Two items that emphasized suspicion and threats formed a scale for the style of *coercion* ( $\alpha = .67$ ).

**External and Organizational Support.** Although a total of 24 items were used to measure the independent variables in this study: 1) Eight items formed a scale for *government support* that inquired about the level of support from specific government entities (i.e., the provincial government, city government, city party committee). While it was expected that there would be some differences in support among these various governmental agencies, all of these items loaded strongly on a single factor. Thus, it might be concluded that the environmental officials saw governments as relatively monolithic in this regard. As a result, these items were formed into a single scale with a reliability coefficient of .95; 2) Five items comprised a scale measuring *public support* which surveyed support from various groups (e.g., the public at large, business, mass media, “green” groups). As before, these loaded strongly on the same factor and were thus aggregated into a scale with an  $\alpha$  of .88; 3) Two items assessed the level of *supervisory support* by inquiring whether the respondent perceived that their boss “respected and cared” about them and provided “guidance and support”. This scale had an  $\alpha$  of .86; and, 4) The adequacy of resources to perform one’s job was measured by a single item that asked if the respondent “encountered inadequate resources in performing their work”.

**Control variables.** Five variables were added as controls in this study, as each might have spurious influences on the hypothesized rela-

TABLE 2 *Rotated Component Matrix of Enforcement Style Items (Varimax Rotation; N=605)*

Items	Components				
	1	2	3	4	5
<b>Formalization Enforcement Style</b>					
1) I emphasize paperwork rather than direct conversation in enforcement	<b>.568</b>	.166	.072	.351	-.087
2) I emphasize strict law enforcement rather than consultation in enforcement	<b>.730</b>	.037	.060	.044	.007
3) I emphasize law rather than personal attitude in enforcement	<b>.762</b>	-.066	-.113	.064	.115
4) I emphasize law rather than outcomes in enforcement	<b>.681</b>	.045	-.018	.169	-.137
5) I emphasize consistency rather than flexibility in enforcement	<b>.648</b>	.014	.109	-.124	.098
<b>External Influence on Enforcement Style</b>					
6) Colleagues have an important influence on my working standards	.052	<b>.775</b>	-.064	.123	.067
7) Other departments have an important influence on my working standards	.029	<b>.812</b>	.085	.224	.081
8) Business has an important influence on my working standards	.002	<b>.837</b>	.121	.163	.046
<b>Education Enforcement Style</b>					
9) Educating the public is my most important responsibility	.071	.015	<b>.891</b>	.051	.182
10) Educating businesses is my most important responsibility	.018	.098	<b>.894</b>	-.046	.184
<b>Coercion Enforcement Style</b>					
11) There is more suspicion than trust between myself and the polluters	.132	.204	.007	<b>.820</b>	.022
12) I use a strict and threatening style rather than penalty avoidance as an incentive in enforcement	.076	.235	-.017	<b>.811</b>	-.010
<b>Prioritization Enforcement Style</b>					
13) The degree of pollution is an important factor in my consideration of each case	-.071	-.022	.122	.003	<b>.826</b>
14) I spend most of my time on the most important responsibilities	-.016	.019	.327	-.068	<b>.616</b>
15) The kind of pollution is an important factor in my consideration of each case	.157	.348	.014	.001	<b>.568</b>

Eigenvalues for components in decreasing order: 3.422; 2.219; 2.070; 1.013; and .901; these 5 components extracted 63.4% of the variance among the items.

TABLE 3 *Rotated Component Matrix of Items Measuring Independent Variables (Varimax Rotation; N=603)*

Items	1	2	3	4	5	6	7
<b>Government Support</b>							
1) The provincial government has provided adequate support for enforcement	<b>.906</b>	-.028	.004	.045	-.095	.019	.032
2) The city government has provided adequate support for enforcement	<b>.907</b>	-.036	.003	.021	-.075	-.020	.046
3) The district government has provided adequate support for enforcement	<b>.795</b>	-.072	-.126	.210	-.019	.025	-.003
4) The city mayor has provided adequate support for enforcement	<b>.901</b>	.021	.095	.064	-.006	-.027	.027
5) The political consultation committee on enforcement provides adequate resources	<b>.795</b>	.013	-.045	.246	.030	-.072	.024
6) Other departments within the city have provided enough support for enforcement	<b>.783</b>	-.040	-.088	.302	.032	.073	-.019
7) The central government has provided adequate support for enforcement	<b>.817</b>	.073	-.017	.181	.014	-.019	.083
8) The city party committee has provided adequate support for enforcement	<b>.839</b>	-.029	.003	.235	.065	-.023	.023
<b>Public Support</b>							
9) There is generally enough support from the public for enforcement	.508	.125	.064	<b>.499</b>	.041	-.177	-.017
10) There is adequate support for enforcement from the mass media	.551	-.061	.006	<b>.576</b>	.058	-.052	.050
11) There is enough support for enforcement from business	.374	-.142	-.041	<b>.717</b>	.041	-.044	.033
12) There is enough support for enforcement from the environmental groups in the community	.408	.090	.046	<b>.728</b>	.043	-.031	.047
13) There is enough support for implementing environmental laws from the other social groups	.322	.003	.043	<b>.810</b>	-.012	-.019	.014
<b>Administrative Ambiguity</b>							
14) There is a lack of administrative support within my organization	-.053	.255	.187	-.107	.019	<b>.645</b>	.071
15) There is a lack of communication and understanding in my organization	-.037	.191	.043	.019	.008	<b>.873</b>	-.028
16) There is a lack of coordination among departments in my organization	-.006	.258	.004	-.063	-.105	<b>.804</b>	-.077
<b>Procedural Ambiguity</b>							
17) There are many unclear rules and regulations in my organization	.007	<b>.785</b>	.039	.075	-.046	.077	-.089
18) There are many conflicting rules and regulations in my organization	.053	<b>.786</b>	.155	.001	-.074	.148	-.109
19) There are many rules and regulations in my job. (reverse coded)	.083	<b>.603</b>	.008	-.089	.061	.329	.014
20) There are many unclear rules and regulations in my job	-.079	<b>.781</b>	.068	.008	-.007	.072	.015
21) There are many conflicting rules and regulations in my job	-.085	<b>.782</b>	.067	-.036	.014	.163	-.078

TABLE 3 *Continued*

Items	1	2	3	Component 4	5	6	7
<b>Supervisory Support</b>							
22) My boss respects and cares about me	.047	-.113	.040	.040	-.022	-.053	<b>.911</b>
23) My boss provides me with all the support and guidance I need to do my job	.122	-.173	.065	.084	-.042	-.014	<b>.873</b>
<b>Environmental Values (NEP scale, adapted)</b>							
24) We are approaching the limits for the number of people the earth can support	-.054	-.058	-.064	.187	<b>.657</b>	.172	.017
25) The balance of nature is very delicate and easily upset	.137	.137	-.037	.042	<b>.653</b>	.017	-.042
26) When humans interfere with nature it often produces disastrous consequences	.074	-.084	.272	.142	<b>.440</b>	.076	.254
27) Humans must live in harmony with nature in order to survive	-.007	-.002	.138	-.112	<b>.585</b>	-.186	-.019
28) The earth is like a spaceship with only limited room and resources	-.034	-.108	.114	-.140	<b>.583</b>	-.083	.056
29) There are limits to growth beyond which our industrialized society cannot expand	-.028	.083	.125	.125	<b>.543</b>	-.061	-.240
30) Mankind is severely abusing the environment	-.090	.001	.286	-.027	<b>.558</b>	.047	.071
<b>Belief in a Legitimate Role for Government</b>							
31) Government must give priority to solving environmental problems	-.043	.172	<b>.472</b>	-.142	.147	.052	.418
32) Government should invest more money in environmental protection	.050	-.034	<b>.760</b>	-.035	.253	.034	.096
33) Government should prioritize environmental protection, even if it requires a tax increase	-.068	.052	<b>.839</b>	-.047	.123	.012	.077
34) Government should prioritize environmental protection, even at the expense of infrastructure	-.020	.078	<b>.843</b>	.081	.130	.089	.037
35) Government should prioritize the environment even if it means reduction in social services	-.024	.189	<b>.667</b>	.100	.013	.043	-.120

Eigenvalues for components in decreasing order: 8.029, 4.352, 3.482, 2.113, 1.563, 1.495, 1.281; these 7 components extracted 63.7% of the variance among the items.

tionships, and warranted inclusion in the model: 1) Gender. The sex of the respondent was dummy coded as “0” for male respondents and “1” for females; 2) Educational Attainment was measured as an ordered, categorical variable with seven choices ranging from “1” for “no post-primary schooling” to “7” for some form of postgraduate degree; 3) Age. The respondents’ current age in years; 4) Environmental Values. We used a shortened, seven-item version of the “New Environmental Paradigm” scale (Dunlap and van Liere, 1978). This scale was shortened primarily because some of the items did not contribute to the internal consistency of the scale and were dropped. The resulting scale had an  $\alpha$  of .70; and, 5) Belief in Legitimacy of Government. The degree of the respondents’ belief that government should play an active role in mitigating environmental problems was measured by five items that had an  $\alpha$  of .70. Each of these variables was used as controls because they could influence the relationship between the support variables and enforcement styles. This is probably most obvious in the case of environmental values and the belief in the legitimacy of government; however, we also thought it prudent to control for age, education and gender as these variables would likely have a broader influence on the favoured enforcement style. A factor analysis of all scales used as independent or control variables, along with the wording of the items, is given in Table 3.

### *Results*

Altogether, four types of results are reported: those for the combined samples ( $n=605$ ); and those for the Guangzhou sample ( $n=202$ ), the Dalian Sample ( $n=193$ ); and the Chengdu sample ( $n=210$ ). Detailed correlation matrices are available from the authors. The reported means among the three samples permit comparisons and highlight differences across the samples. Generally, the same general pattern of preferences was observed across all three samples. “Prioritization” and “education” are the most common style dimensions in each sample, whereas “coercion” and “external influence” are much less favoured. This relatively “positive” approach to environmental enforcement may reflect both the resource limitations of environmental regulatory enforcement and the relative caution with which environmental officials must approach powerful business interests that are often state-owned.

It also appeared that the Guangzhou sample tends to be relatively lower on most style dimensions. A one-way ANOVA confirmed that significant differences exist among the three samples for all style dimensions with the exception of “coercion”: Dalian’ officials, for

example, rely more heavily on the style dimension of “formalization” than officials in Guangzhou, who rely upon it least; both Chengdu and Dalian officials emphasize the dimensions of “education” and “prioritization” significantly more than those in Guangzhou, and enforcement officials in Chengdu are significantly more likely to use the style dimension of “coordination” than their counterparts in the other two regions. An inspection of the means revealed other differences among the samples. Some of the more interesting differences including the following: enforcement officials in Dalian are older, more likely to be male, espouse stronger environmental values (on the NEP scale), and report the highest levels of both government and public support. In contrast, Chengdu officials reported significantly less educational attainment and appear to perceive greater obstacles for enforcement.

The estimates for the regression models are reported in Table 4. In this table the results for each sample are reported in the columns under each enforcement style dimension. For example, the results for the regression on the enforcement style dimension of “education” for the Guangzhou sample (“G”) are reported in the first column. Similarly, the results for the regression on the dimension of “prioritization” for the Chengdu sample (“C”), the Dalian sample (“D”) and the total combined sample (“T”) are reported in the fifth, sixth, and seventh columns respectively.

The initial impression of these results is one of inconsistency across the three samples. Although many significant relationships are in evidence and the predictive power of the models is reasonably high (in most cases ranging from 11% to 33% of the variance explained), there is no single significant relationship common to all three samples. This would appear to generally confirm the potency of local influences on the selection of enforcement style dimensions among environmental officials in China and to offer ample support for the seventh hypothesis.

The first pair of hypotheses (H1a and H1b) anticipated relationships between government support and enforcement styles. Such relationships are most evident in the Dalian sample, with such support having a strong, positive influence on preferences for the enforcement style dimensions of “education” and “prioritization”, but a negative relationship to “external influence”. In contrast, although a positive relationship between government support and prioritization is found in Guangzhou, significant *negative* relationships are observed for the dimensions of “formalization” and “coercion”. In Chengdu, government support has only negative influences on “coercion” and “external influence”. Although this leaves the picture rather confused, it does seem clear that H1a received mixed support in that government support seems to have a variable, positive relationship to “prioritization”

TABLE 4 *Regression Coefficients of Model Predicting Enforcement Styles<sup>a,b</sup>*

Independent Variables	Dependent Variables																			
	Education			Prioritization			Formalization			Coercion			External							
	G <sup>c</sup>	C	D	T	G	C	D	T	G	C	D	T	G	C	D	T				
Government Support	.039	-.141	<u>.336</u>	.021	<u>.259</u>	-.160	<u>.404</u>	.022	<u>-.322</u>	.084	-.155	.035	<u>-.275</u>	<u>-.234</u>	-.158	<u>-.136</u>	.000	<u>-.208</u>	<u>-.196</u>	<u>-.177</u>
Public Support	<u>.269</u>	<u>.270</u>	-.081	<u>.131</u>	.144	<u>.237</u>	<u>-.199</u>	.036	<u>.499</u>	.071	.006	.059	<u>.287</u>	<u>.258</u>	.099	<u>.159</u>	.084	<u>.217</u>	.100	<u>.158</u>
Administrative Ambiguity	.091	.134	<u>-.285</u>	-.053	-.009	.085	-.011	.062	<u>.306</u>	.047	<u>.298</u>	<u>.162</u>	-.090	<u>.197</u>	<u>.177</u>	<u>.102</u>	-.149	<u>.375</u>	<u>.151</u>	<u>.175</u>
Procedural Ambiguity	-.012	-.097	<u>.240</u>	.031	.064	-.153	-.003	-.056	-.017	-.086	-.122	-.010	<u>.468</u>	.033	<u>.368</u>	<u>.197</u>	<u>.404</u>	-.099	<u>.287</u>	<u>.214</u>
Resource Inadequacy	.150	<u>.146</u>	-.050	.063	<u>.184</u>	<u>.214</u>	.056	<u>.105</u>	-.1.21	<u>-.147</u>	.055	-.024	<u>-.196</u>	<u>-.142</u>	-.005	<u>-.079</u>	-.032	.085	.114	.036
Supervisory Support	.008	-.075	-.002	-.005	-.078	<u>.213</u>	.017	<u>.097</u>	<u>.227</u>	<u>-.219</u>	.143	-.003	.061	<u>-.248</u>	-.079	<u>-.105</u>	.024	<u>.138</u>	-.024	<u>.108</u>
b) Control Variables																				
Gender (0-M; 1=F)	.052	.125	-.029	.048	.090	.006	<u>.147</u>	-.008	-.126	-.016	.057	-.030	<u>-.166</u>	.028	.075	-.006	.152	-.001	-.042	-.002
Education	.016	.036	-.021	.013	-.078	.041	-.106	-.015	-.035	.022	.040	.033	-.073	-.100	-.044	-.055	-.014	<u>-.148</u>	<u>-.185</u>	<u>-.117</u>
Age	<u>-.020</u>	<u>.181</u>	-.031	.074	-.010	<u>.273</u>	-.015	<u>.140</u>	<u>.233</u>	.079	<u>.252</u>	<u>.142</u>	-.085	-.081	-.014	-.100	-.158	.073	-.107	-.082
Environmental Values	-.024	.079	.120	.058	.108	<u>.141</u>	<u>.050</u>	<u>.096</u>	-.117	.073	-.039	-.042	<u>-.182</u>	-.092	.113	-.063	.046	-.133	.083	-.028
Legitimate Role for Government	<u>.351</u>	.086	<u>.344</u>	<u>.201</u>	<u>.213</u>	-.011	<u>.216</u>	<u>.066</u>	.020	-.085	-.116	-.049	<u>-.156</u>	.043	-.039	-.041	-.001	.003	.039	.012
R <sup>2</sup>	.26	.14	.27	.13	.23	.22	.21	.14	.27	.11	.16	.04	.33	.17	.22	.12	.21	.25	.21	.17

<sup>a</sup>These models have zero degrees of freedom. Because the goodness of fit measures would all imply perfect fit, they have been omitted.

<sup>b</sup>Coefficients that are significant in excess of the .05 level of confidence are bold-faced and underlined.

<sup>c</sup>G=Guangzhou (n=202); C=Chengdu (n=210); D=Dalian (n=193); T=Total=Combined Sample (n=605)

(as predicted), but a negative relationship to “coercion” (also as predicted). Its counterpart, H1b, received somewhat more support in that “formalism” and “external influence” are negatively related to government support (although these relationships are not significant in all samples).

The same general pattern holds for the second through sixth hypotheses (i.e., there are some significant relationships, but the pattern of significant coefficients is irregular). Given the irregular pattern of findings, it becomes rather difficult to draw broad conclusions. One way forward may be to focus this discussion on relationships that are common to at least two subsamples (especially those common to Guangzhou and Chengdu, as they are probably more “typical” of cities in China, Dalian being the exception by virtue of its “green” reputation. Significant coefficients for the combined, “total” sample will also be discussed. Employing this approach, we would reiterate that government support has a positive influence on the dimension of “prioritization” and a negative influence on the “coercion” and “external influence” dimensions. On the other hand, public support appears to have a somewhat more generally positive influence on enforcement style dimensions. Specifically, public support tends to promote the dimensions of “education” and “coercion” (and, possibly, “external influence” as well). With the exception of “formalism” (a strong positive relationship in only Guangzhou), this provides a modicum of support for H2a and H2b.

The influence of administrative ambiguity on enforcement styles appears to promote a greater emphasis on “formalization”, and “external influence” (as predicted by H3a), but also with “coercion” (expected to be negative in H3b). Because the administrative support items dealt with matters of communication and coordination, these would seem to be enforcement style dimensions that officials may adopt when they lack information about desired objectives and a clear sense of organizational culture, and are otherwise estranged from the organization. Thus, H3a is partially supported while H3b is not.

Procedural ambiguity (i.e., unclear, excessive and conflicting rules) appears to have a positive relationship with the style dimensions of “coercion” and “external influence”. As with administrative ambiguity, we might similarly propose that an absence of clear procedures may promote styles that are intended to “get the job done” by any means (i.e., coercion) or seek guidance from external referents. No significant relationships were observed with “formalism”. Thus, while H4a is supported, H4b is clearly not.

Inadequate resources appear to promote the dimensions of “prioritization” while suppressing “coercion”. While it seems reasonably clear

why insufficient resources would lead to prioritization (i.e., to better leverage limited resources to obtain the maximum benefit for the environment), it is somewhat less obvious why inadequate resources would be related to coercion. It might be conjectured that insufficient resources may promote a measure of “posturing” or “bluffing” on the part of enforcement officials that underscores the likelihood of sanctions over more resource-intensive options (e.g., education, prioritization or formalization). Thus, H5a received mixed support while H5b is not supported.

Finally, the relationships involving supervisory support are perhaps the most equivocal among those hypothesized. In the only instance where two samples have significant results (i.e., for the style dimension of formalization), the results were in opposite directions. Thus, it does not appear prudent to make more general statements about its influence and we would conclude that there is no support for either H6a or H6b.

It should also be noted that some of the control variables also suggest interesting relationships. 1) Education appears to be negatively related to the style dimension of “external influence”. Presumably, this is an indication that more educated officials are relatively more confident in their styles and are less likely to look toward external influence; 2) Older enforcement officers were more likely to pursue prioritization and formalization style dimensions. This suggests that older officials may use their experience to achieve the greatest effect on pollution reductions (i.e., prioritization) or to know how to “go by the book”; 3) A respondent’s belief in the legitimacy of government actions to protect the environment appears to be positively related to the style dimensions of “education” and “prioritization”. These findings conform to the common sense expectations one would have for enforcement officials with greater convictions regarding a proactive government; and, 4) An enforcement official’s environmental values as measured by the NEP scale appear relatively inert, but may have a positive effect on the style dimension of prioritization.

### *Discussion*

A substantial body of literature exists that examines how enforcement style dimensions vary in industrialized democratic countries. Our study makes an initial effort to tackle this research problem in a contrasting context, a developing, and relatively undemocratic country – China. The results of this study provide the empirical bases for us to make some preliminary observations on the ways external and internal factors influence enforcement style dimensions in China. A starting point

is that China's adoption of a decentralized approach in environmental governance has encouraged different local strategies, thereby allowing local institutional factors to play a greater part to shape enforcement style dimensions while eroding the national character which has been so pronounced in a communist single-party regime.

In some ways, China is similar to previous findings in Western contexts concerning the influences of government and public support on enforcement style dimensions. As regulation theories suggest, external support and organizational factors do appear to exert an influence on an enforcement officer's preferences among enforcement style dimensions. What can be asserted with the greatest conviction, however, is that the strength and even the directionality of these relationships appear to be contingent upon political, environmental and organizational contexts. In this regard, Dalian appears to be the most unique sample by virtue of being considered among the "greenest" cities in China, while Chengdu and Guangzhou are probably more typical of large urban centers with serious environmental problems. Thus, it is conceivable that findings common to these latter two cities may be generalized to similar regions. Probably the findings for Dalian should be regarded more as an exceptional "case study". That said, some of the overall impressions gleaned about the effects of external and internal influences will be briefly reviewed and the implications discussed.

Broadly generalizing, the influences of government and public support do appear to be desirable for the effective enforcement of environmental regulations in China. This more normative statement is derived from the fact that more positive and proactive enforcement style dimensions, especially "prioritization", may be linked to enforcement effectiveness (Tang, Lo and Fryxell, 2003). Consequently, one can see that although the influence of government support may not be strong in each sample, *when present* it positively influences the dimensions of "education" and "prioritization", which may be particularly more productive in securing regulatory compliance.

The same can be said for the influence of public support on environmental protection. In contrast to government support, public support appears to encourage environmental results over process by being positively related to a broader range of enforcement style dimensions. Thus, government support appears to be more discriminating in terms of *how* environmental protection is realized, whereas public support appears to promote results. It might be suggested, however, that both are generally compatible and important for effective environmental regulation in China. Indeed, in most contexts public support would lead to increased government support for environmental protection. This would also

appear to be true in modern China as local governments have increasingly become more susceptible to popular influence in formulating pollution control measures under current political and economic liberalizing trends. For example, the Deputy Mayor of Guangzhou pointed out that widespread complaints from the public about degraded air quality played a considerable part in recent efforts to control vehicle pollution in a comprehensive manner (Guangzhou Environmental Protection Bureau, 1997, 59–60).

In contrast, the influences of organizational factors on enforcement style dimensions in the Chinese context were relatively inconsistent and generally not in conformance with generalizations from Western studies. Regardless, some broad conclusions are possible. Clearly, from a management perspective, both administrative and procedural ambiguities are ill-advised. These general principles appear to be confirmed in this study since administrative ambiguity, when significant, appears to reinforce the less positive style dimensions. This also appears to be true of procedural ambiguity. Although it may seem obvious that environmental enforcement officials should have adequate resources to do their job, it is interesting to observe that they are negatively related to the dimension of “coercion”. We might speculate that enforcement officers tend to resort to more negative approaches when they lack the resources for more positive approaches.

Supervisory support does not appear to be as influential as might have been expected. This could underscore earlier observations that enforcement officials work largely in the field and less under the influence of supervisory preferences than ordinary employees. A final point is related to the finding that, when enforcement officials believe that government has a legitimate and important role to play in environmental protection, this generally promotes the style dimensions of education and prioritization. This also leads to the conclusion that some care should be given to the recruitment of enforcement officers to ensure that they possess such a conviction.

Because one major theme that emerged from this study was the variability of the findings across the three samples, some additional observations seem appropriate about differences in the samples and the system of regulatory enforcement in China. This study provides empirical evidence to support a theoretical formulation that regional differences reflected in external and internal factors leads to divergent enforcement style dimensions in China. Clearly, it must be borne in mind that China is a large and heterogeneous nation and, in many ways, this heterogeneity is reinforced in its approach to regulatory enforcement. This is because municipal EPBs receive most of their personnel and financial resources directly from the municipal government

(Jahiel, 1998; Sinkule and Ortolano, 1995). Thus, although the EPB is given policy directives from the state agency (i.e., SEPA), it is overseen by a municipal environmental policy committee, which is represented by all major municipal agencies and usually headed by either the mayor or the deputy mayor.

As a result, municipal EPBs across China may share similar organizational structures, but do vary considerably in their actual enforcement practices and priorities. For instance, different localities may determine by themselves whether they want to ban the use of non-biodegradable food containers, whether they want to build a larger team to collect pollution fees, or how they want to tackle vehicular emissions (Sims, 1999; Sinkule and Ortolano, 1995). Such variations have been encouraged by China's decentralized structure of environmental governance, which gives local authorities the flexibility to formulate environmental regulations and adopt regulatory measures that meet local needs within the broad national environmental policy framework (Qu, 1990).

Indeed this greater local autonomy has allowed more room for bureaucratic bargaining between economic bureaus and environmental agencies concerning the policy preferences of environmental protection and economic growth. Strong and influential local government agencies, such as planning commissions, economic commissions, construction commissions, and industrial and commercial authorities, are known to be reluctant to endorse and enforce stringent environmental measures for fear that these might impede economic growth. Under the strong pro-growth orientation of municipal leaders, the Guangzhou Environmental Protection Bureau (GEPB), which has widely been perceived to be a political underdog, has actively endeavoured to create a more favorable context by obtaining more extra-bureaucratic support for environmental protection. To win the support of the public and local people's congress, the GEPB has made substantial efforts to propagate environmental values, arouse popular concerns concerning local environmental problems, handle pollution complaints, and convey people's grievances about environmental concerns to the municipal government. Unfortunately, strong bureaucratic resistance to greater involvement by the public in environmental governance persists inside Guangzhou's bureaucracy (Lo and Leung, 2000).

In contrast, blessed with a mayor who espouses a green city vision, the Dalian Environmental Protection Bureau (DEPB) has found itself in a superior position to bargain with traditionally powerful government authorities over the adoption of tougher environmental policies and in their vigorous enforcement. Adding to its advantage was the presence of relatively environmentally aware public (State Environmental Protection Administration, 1998: 22–39). Because of the more favourable

outcomes achieved from internal political bargaining, the DEPB as a stronger agency has been able to place more stress on the enforcement style dimensions of prioritization, formalization, and education. Thus, in China, there is much more local influence on environmental enforcement than one might normally expect in a communist unitary political system, and such local influence is contextually defined, which produces diverse impacts on enforcement style dimensions.

Another issue raised by these findings is the level of analysis. Clearly, the level of analysis was directed at local enforcement officials and their perceptions. However, looked at another way, each official in a particular region is tied to a common agency. Consequently, each enforcement officer appears to be subject to common influences in the form of a loose organizational culture. Thus, this combination of between-group cultural, organizational, political, economic and environmental heterogeneity would easily account for this study's findings.

Finally, local variations do not necessarily rule out a national enforcement style in China, as informed by the regulation research. If so, then what is China's style of regulation? In generalizing the empirical results of this study, the Chinese style can best be characterized by a high degree of formalization with emphasis on prioritization and education. This is quite consistent with current literature that suggests regulatory enforcement in a unitary system is less susceptible to external influences and thus has less of a tendency to depend on coercion than is the case for a pluralistic political system. In China, public influence on environmental enforcement is quite marginal in the absence of effective venues for popular participation and of powerful independent non-governmental green groups. The presence of an informal authority structure manifested in the form of "guanxi" (i.e., a network of quid pro quo relationships grounded in Chinese cultural values) has made coercion less desirable than an educational approach. Furthermore, prioritization is particularly important in regulatory enforcement, as the Chinese government has constantly confronted the competing values of environmental protection and economic development in getting the country out of poverty. Finally, formalization is highly desirable in the reform era since environmental administration by law marked by strict adherence to rules and regulations has been established as the guiding principle in regulatory enforcement (Lo, 1992).

#### *Limitations*

Because it was limited to enforcement officials in three cities, the limited generalizability of these findings should be recognized. Indeed, the findings underscore the limits of generalizability in China from studies

that employ a single local or regional sample. Nevertheless, some findings common to Chengdu and Guangzhou could with caution be generalized, but should be reinforced with additional research. Second, one-dimensional biases are a risk in studies that collect all their data using surveys. While in most cases objective measures are preferable to subjective ones, the measurement of enforcement styles is such that objective measurement is very difficult. Third, we recognize that there may be other potential biases in the data. In particular, there may be a form of social desirability bias where the officials may have provided information that they thought was “appropriate”. Although it is difficult to gauge how strongly these influences may have been present, if strong “pressures” were present we would have expected less variation among the respondents and more elevated means on particular items (e.g., government or supervisory support). The fact that such tendencies were not observed, that the survey was anonymous, and that it involves relationships and comparisons among variables (i.e., rather than absolute values) would suggest that such biasing influences would not have negated our findings.

### *Conclusions*

In this study of the enforcement style dimensions of environmental protection officials in three fast-growing Chinese cities, it was found that environmental officials in individual regions tend to adopt a similar pattern of enforcement style dimensions. Clearly, most enforcement officials in China appear to favour the style dimensions of “prioritization” and “education” over “coercion”. At the same time, this study found that there were significant differences in each sample in the pattern of influences on these preferences. Thus, it appears that in China these style dimensions are shaped by local contextual factors. With more favourable conditions (i.e., the presence of government and public support), EPB officials in Dalian appear to have gravitated towards a relatively more formalistic approach. Thus, along with perceptions of greater resources and administrative and procedural clarity, appears to have also encouraged more aggressive enforcement. In contrast, within an institutional setting that is less supportive, such as in Guangzhou, agencies rely relatively more on the dimensions of “education” and “prioritization” in order to obtain compliance. One explanation for this may be that contextual obstacles prevent them from resorting to formalism. It seems that the politics of *guanxi* (that is, the domination of informal relationships) – being so pervasive in China’s political system – have generally promoted an emphasis on coordination

and collaboration while discouraging overt coercion in environmental enforcement across these three cities.

In addition, under China's authoritarian one-party system, while government support remains the chief determinant of the stylistic profile of agency officials, public support is increasingly becoming a determining factor. However, considering that Dalian has achieved the best record of regulatory enforcement (under the major's unusually green vision of economic development) we would propose that in today's China, the government's policy priority remains the key institutional factor for effective environmental enforcement.

A few important findings have emerged in this study. The first one is that enforcement style dimensions in China tend to be diverse. This seems to defy the conventional view of a uniform governance style in this Communist unitary state. The excesses of a top-down approach of regulatory control in Mao's era have been substantially mitigated by a decentralized mode of governance in need of effective market reforms. We may hence theorize that different styles of local regulation enforcement are encouraged in China's unitary system as local governments are granted the autonomy to sort out the policy priorities of economic development and environmental protection. The second finding is that the politics of choice among enforcement style dimensions exists in China's established single party regime. The vision of monolithic rule no longer holds sway, and bureaucratic bargaining has come into play in an increasingly fragmented political setting. As centralized control relaxes and becomes less preferable, enforcement dimensions in China are mainly region-specific, being shaped by a set of antecedents with their influences contextually determined. The third finding is that public support has found a way to enter into China's authoritarian political arena as an institutional factor shaping agency officials' profile of regulatory approaches. This, to a certain extent, makes the proposition that public participation is not a component part of the environmental governance system in China outdated. As local governments have been more willing to meet local demands under current economic decentralization, local enforcement styles will be increasingly determined by public support.

Overall, this research represents an initial, but significant, effort to examine enforcement styles within nations in non-democratic regimes, an area that has not yet received adequate attention. This research enriches our understanding of regulatory enforcement by showing how external support (i.e., public and government) and various organizational factors influence the enforcement styles of officials. To a significant extent, the findings of this study have shown the limits of the idea of national styles of regulation and the inadequacies of existing

studies on comparative environmental governance. Given the seriousness – indeed, the urgency – of environmental degradation with its global implications, valid insights that can help enhance regulatory enforcement at the sub-national and local levels are sorely needed.

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