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From support to pressure: The dynamics of social and governmental influences on environmental law enforcement in Guangzhou City, China

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Abstract

This paper examines how changes in governmental and social influences affect environmental enforcement in Guangzhou city, China, between 2000 and 2006. The paper finds that a form of “decentered regulation” has developed. Regulatory enforcement is no longer the sole affair of the government and the regulatory bureaucracy, but has been increasingly influenced by societal forces. The transformation over time shows the promises and limits of decentered regulation in Guangzhou’s dynamic authoritarian setting. Analyzing a set of longitudinal survey data and qualitative interviews, the paper finds that by 2006, the rise of civil society and its increased support for protecting the environment had a double-edged impact on the enforcement of environmental regulations. The paper demonstrates that on the one hand, by 2006, when government support for enforcement was low, societal forces developed an ability to counterbalance such lack of governmental support and positively influence enforcement. However, it also shows that when government support was high, a concurrent rise in societal support created a negative effect on enforcement. Thus too much societal support can become an enforcement burden.

Keywords: authoritarianism, China, regulatory enforcement, regulatory governance, societal support.

1. Introduction

Using the term “decentered regulation,” Black (2002) summarized a series of studies arguing that regulation is no longer the sole affair of the government and that it no longer

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works in a mono-directional manner within the state, setting and enforcing standards to steer the behavior of market actors. While most academic attention has been focused on the regulatory functions of market actors, regulatory scholars (i.e. Gunningham *et al.* 1988; Macnaghten & Jacobs, 1997; Tietenberg 1998; Hutter & Jones 2007) have begun pointing to the importance of societal non-state actors in shaping the content and functioning of regulation in the late 20th and early 21st centuries. This body of work largely emerged from the studies on regulation in Organisation for Economic Co-operation and Development (OECD) countries with constitutional democracies. In the body of literature concerning decentered regulation and regulatory governance, far less effort has been made to examine the role of societal forces in more authoritarian settings in countries such as China. Perhaps this is logical, as an authoritarian context emphatically precludes an active role for societal actors, as there are only limited freedoms of organization, information, speech, and press to allow society to play any influential part in the regulatory process.

A closer look at authoritarian systems, such as China, tends to show that most of them are not static. In the last 15 years in China, we see the appearance of a commercializing press that has increasingly reported regulatory violations and resultant grievances (cf. Polunbaum & Lei 2008; Liebman 2011a; Shirk 2011). At the same time, China has witnessed the rise of civic organizations that seek to gather information and respond to regulatory violations (cf. Ho & Edmonds 2008). More recently, China has seen a quick growth in an activist and creative group of online “netizens,” who, on occasions, have been able to thwart, resist, and even mock the controls of the authoritarian state while addressing regulatory failures (Yang 2009; Xiao 2011). In addition, China has gradually developed into a more “responsible and responsive” authoritarian state that has at times even promoted media and popular supervision of local authorities and enforcement agencies failing in their regulatory duties (Deng & Feng 2009; Van Rooij 2012). Finally, we see that China has started to move away from a largely command and control approach to regulation to also include economic, voluntary, and social instruments (Economy 2006; Van Rooij 2012). In short, China has already become a post-totalitarian (Steinfeld 2010, pp. 6–7) authoritarian state, where societal actors have developed and been able to find some room to play a regulatory role, albeit within the strong confines of the party-state.

As such, China presents an ideal case to learn about the dynamics of decentered regulation in an authoritarian setting. This study seeks to take up this intellectual inquiry by examining how societal support for environmental protection has interacted with local political support to shape the administrative enforcement of environmental regulation in Guangzhou, one of China’s fastest-developing coastal mega-cities, in a panel study comparing data collected in 2000 with that collected in 2006.

This longitudinal study builds on earlier work on the administrative enforcement of environmental law in China. Most of such research has found that effective administrative enforcement has been difficult to achieve chiefly because of a combination of vague substantive and procedural laws and standards (Palmer 2006) and the regime’s “fragmented authoritarianism” (Lieberthal 1992, 1995; Mertha 2009), with local governments protecting local economic interests by not enforcing locally unfavorable regulations (Sinkule & Ortolano 1995; Ma & Ortolano 2000; Swanson *et al.* 2001; Zhang 2002; Tang *et al.* 2003; Van Rooij 2006b). Local enforcement problems are exacerbated when environmental protection bureaus fail to receive sufficient support from local communities or

environmental groups to counterbalance obstruction by local governments (Johnson 1997; Dasgupta *et al.* 2000; Lo & Fryxell 2005; Tilt 2007; Warwick & Ortolano 2007), and/or when they face resistance from powerful enterprises (Van Rooij 2006b).

Mertha's (2009) thesis of pluralization of fragmented authoritarianism enables us to better understand local protectionism and social influence in regulatory enforcement in a dynamic setting. He argues that China's form of fragmented authoritarianism has changed and that it has become pluralized with more influence from non-governmental "policy entrepreneurs." Accordingly, governmental action has increasingly been the outcome of an interaction between plural actors, both state and non-state, who interact within the confines of an authoritarian setting that will seek to control activities that ultimately affect the position of those in power.

Such an emerging pluralist view can help us explain the variation in the administrative enforcement performance and outcomes we have witnessed in the period between the late 1990s and 2006. Comparing the number of administrative sanctions between 1998 and 2006, one can see a 132 per cent increase and a 383 per cent increase when the number of sanctions is adjusted to the amount of industrial pollution (Van Rooij & Lo 2010).¹ Similarly, there has been a 208 per cent increase in the average fine per case when comparing the numbers from 2001 and 2006 (National Bureau of Statistics of China 1998, 1999; National Bureau of Statistics of China & State Environmental Protection Administration 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007; Van Rooij & Lo 2010). Such changes are likely the result of shifting coalitions that support stricter enforcement of environmental regulations, both from within and outside the fragmented state (Van Rooij & Lo 2010). There is a widely held view that the levels of support from various key government stakeholder groups are evolving to be more supportive of tougher regulatory enforcement, both locally, following the greening of local governments (Li *et al.* 2011), and in response to various initiatives from higher levels of government, including enforcement campaigns (Brettell 2003; Economy 2004; Van Rooij & Lo 2010; Van Rooij 2012), vertical management reforms, recentralizing budgets, and/or imposing authority over appointments (Lo & Tang 2006). In the same period we have also seen a surge in citizen complaints (Van Rooij & Lo 2010), activism by environmental organizations (Ho & Edmonds 2008), and increased reports about environmental issues in the media. Unfortunately, much of this remains speculative, as there has been little effort to more systematically investigate such shifts in support for regulatory enforcement.

In order to systematically investigate such shifts and develop a dynamic view of decentered regulation in an authoritarian setting, the present study endeavors to analyze how changes (between 2000 and 2006) in China's pluralizing fragmented authoritarian settings have shaped the administrative enforcement of environmental law. It builds on earlier work conducted by the authors, analyzing the variation in enforcement practices (Van Rooij & Lo 2010) and demonstrating that enforcement has become more formalist and coercive between 2000 and 2006 (Lo *et al.* 2009). It also builds on earlier work by the authors on local social and governmental support, evidencing a strategy of the Guangzhou Environmental Protection Bureau (EPB) to garner community support to aid their work starting from the 1990s, and showing that by 2000 local community support positively interacted with high government support to improve enforcement (Lo & Fryxell 2005).

This study deepens the earlier work by presenting for the first time how changes in social and government support have shaped perceived enforcement effectiveness over

time. It presents and analyzes survey data from environmental enforcement officials in Guangzhou collected in 2000 and 2006 respectively, supplemented by a semi-structured interview of individual enforcement teams of the Guangzhou EPB. Guangzhou is selected (as is explained in further detail) because it has been one of China's vanguard environmental cities over the past decade. In Guangzhou we generally see increased government support for environmental protection, a development of citizen participation and green civic organizations, and some of the country's most independent and critical media reporting, most notably by the Nanfang Daily Press Group. Guangzhou is, thus, ideally suited to illustrate the development of a form of decentered regulation in China. The surveys asked how social and government stakeholders support environmental protection, and how effective the enforcement has been, according to the *perception* of enforcement officials working at Guangzhou EPBs. This data is analyzed to understand how changes in social and political support have affected perceived enforcement effectiveness. Such analysis yields a clearer understanding of the dynamics of how social and political forces have influenced regulatory enforcement, which is an important element of decentered regulation in an authoritarian setting.

2. Literature review and conceptual development

The regulatory enforcement literature, which is largely based on studies from Western, non-authoritarian contexts, recognizes that the way an agency enforces the law is the result of factors both internal and external to the agency. Agency obstacles include resource shortages (Bardach & Kagan 1982; Wilson 1989; Kagan 1994), weak internal management processes (Lipsky 1980; Bardach & Kagan 1982; Kagan 1994), and weak leadership (Wilson 1989; Kagan 1994). The most important external obstacles are insufficient governmental support (Wood 1988; Wood & Waterman 1994; Gould *et al.* 1996), and insufficient societal pressure for enforcement (Sonnenfeld 2002; Gunningham *et al.* 2003; Hutter & Jones 2007).

In the Chinese context, governmental and societal support is also a key factor influencing how environmental authorities – the EPBs located at all sub-national levels of administration – enforce the law (Van Rooij 2006b).² We define government in the Chinese context as any organization that is part of the broader party-state, including entities with executive, judicial, legislative, or consultative powers at various levels of administration. We define societal actors in the Chinese context as citizens, civic, or business organizations. Most studies of pollution enforcement in China have identified the lack of local government support as *the* major factor obstructing effective sanctions against violations (Bachner 1996; Jahiel 1997; Railton 1998; Yao 1999; Ferris & Zhang 2003; Howlett 2004; Tong 2007). Prior to the 9th Five Year Plan, support for environmental protection was nearly nonexistent at the national level, as it was clearly subordinated to economic growth (Bachner 1996; Liu 1999; Ma & Ortolano 2000; Lo & Fryxell 2005). More recently, however, a better balance of priorities has been sought through the 11th Five-Year Plan (2006–2010) at the center, shining the spotlight even more clearly on the negative role played by local governments.

Using the term “local protectionism” (*difang baohuzhuyi*), observers generally hold that because local governments provide most of the EPBs' resources and have a direct influence on EPB leadership appointments, they use these and other powers to obstruct EPBs from enforcing the law whenever it is perceived to conflict with local economic

interests. In addition, local functional departments often fall in line to further undermine pollution enforcement. There have been numerous cases where local construction, economic, planning, trade, and industry bureaus have conspired to undermine the strict enforcement of environmental law, in particular environmental impact assessment regulations (Lo & Leung 2000; Ma & Ortolano 2000).

Importantly, changes over the last decade have quite likely affected local governmental support for their EPBs, as well as problems originating from a lack of such support. Since 1996, China's national leaders have paid increasing attention to environmental protection. The 9th Five-Year Plan (1996–2000), for example, promised to rein in “aggravating pollution and ecological damage.” The 10th Five-Year Plan (for 2001–2006) emphasized that further improvements in industrial productivity were to be sought in parallel with environmental performance. During this period, the central authorities increased financial resources for environmental protection from 0.73 per cent to 0.93 per cent to 1.2 per cent of expected GDP in the 8th, 9th, and 10th Five-Year Plans, respectively (OECD 2007). Meanwhile, the status of the Chief of the State Environmental Protection Administration (SEPA) was upgraded in 1998 to the ministerial rank (Lo & Leung 2000), and SEPA was converted into a full ministry in 2008 when the Ministry of Environmental Protection (MEP) was established. Another key development at that time was the adoption of the “Environmental Quality Administrative Leadership Accountability System.” This represents a systematic attempt to hold local leading government officials responsible for the overall environmental quality of their jurisdictions by incorporating it as a key criterion in their performance evaluations (Lo & Tang 2006). The most direct form of national level support for EPB enforcement work has occurred through the organization of law enforcement campaigns, which have been organized since 1996. During such campaigns, several central level departments cooperate, often under the direct support and guidance of the highest leaders, to organize a national effort to detect and punish certain kinds of violations of pollution law (Editorial 2001; Brettell 2003; Economy 2004; Van Rooij 2006b). During such campaigns, local EPBs are observed to increase their number of inspections and punish violations more stringently. In the years 2003–2005, for instance, a total of over 1.3 million companies were inspected during campaigns; among them, over 16,000 enterprises were closed, and 8,000 were ordered to suspend production (OECD 2006).

The effect of the increased support for environmental protection, as well as national-level pressure on local governments and their EPBs to curb pollution and enforce the law, are likely to cause gradual changes in the way local governments support EPBs in their work. There is some evidence of a “greening” of the local Chinese state, even occurring locally with a limited push from higher levels (Li *et al.* 2011). In the last decade, many local governments appear to have become more committed to the environment, investing more in environmental protection and providing stronger support for local EPBs. The most salient examples are the so-designated “State Environmental Protection Model Cities,” such as the coastal cities of Dalian, Zhuhai, and Xiamen, whose governments boast strong environmental reputations matched with environmental spending and support. Even traditionally pro-growth cities, such as Guangzhou, Wuhan, and Chengdu, have become more environmentally friendly, as evidenced by their increased spending on environmental protection (Lo & Fryxell 2005; Lo *et al.* 2006) and their employ of ample pro-environment rhetoric in their general policy plans. For example, the Guangzhou municipal government embraced the designation of “green model city” as a priority in its

10th Five-Year Plan. In addition, some local governments have even introduced local environmental regulations that are more stringent than those at the national level. An example is Kunming in Yunnan Province, whose Dianchi Lake Protection Regulations of 2002 went far beyond the Water Pollution Prevention and Control Law of that time by prohibiting water discharges beyond the standards (which formally were not illegal, but merely required payment of discharge fees), and by ruling that enterprises should be ordered to halt production if they continue to exceed discharge standards (Van Rooij 2006b).

Our study seeks to understand how the enforcement agents themselves perceive these changes in governmental support for environmental enforcement. It is hypothesized that:

H1: Perceptions of government support for regulatory enforcement in China increased during the period from 2000 to 2006.

H2: The relationship between government support for regulatory enforcement and enforcement effectiveness was positive and increased during the period from 2000 to 2006.

A second important external factor which has a bearing on how pollution law is enforced in China is the level of societal support for environmental protection and EPBs. Societal support for EPB law enforcement can work directly or indirectly. A direct way through which citizens support the ECBs' enforcement work is through filing complaints, which help ECBs to detect violations of the law, especially when they lack sufficient staff and resources to carry out effective proactive inspections (Johnson 1997; Dasgupta *et al.* 2000; Lo & Leung 2000; Wang 2000; Van Rooij 2006a,b; Warwick & Ortolano 2007). Citizens and civic organizations can also support EPB enforcement work more indirectly through media involvement and collective action (Tilt 2007; Van Rooij 2010), which creates extra pressure on local governments to curb pollution and support EPBs in their law enforcement work. In the present political and economic conditions, there are, however, clear limits to what societal support can be expected to achieve, as many citizens may depend on local polluting sources of income (Van Rooij 2006b) and civic organizations may not be allowed sufficient freedom of organization to gain sufficient power and leverage (Lo & Leung 2000; Ho 2001; Tong 2007; Ho & Edmonds 2008).

In recent years, there has been an ostensible increase in societal support. In the period between 2000 and 2006, for example, the number of complaints citizens lodged with EPBs regarding pollution increased by 140 per cent (National Bureau of Statistics of China & State Environmental Protection Administration 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007). Recent times have also witnessed the rise of a new kind of green civic organization, such as the Huai River Defenders, Civil Society Watch, and the Center for Legal Assistance to Pollution Victims, which operate directly on pollution and legal issues and are less timid in confronting local governments and enterprises directly (Van Rooij 2010) compared to the earlier "embedded" organizations (Ho & Edmonds 2008). The media have also become increasingly willing to report local pollution scandals, sometimes even directly supporting local pollution victims who have been arrested for organizing protests and in direct critical opposition to local governments that had protected local industry and undermined enforcement work (Van Rooij 2010).

There is evidence that an increase in societal support has a positive effect on EPB enforcement work. SEPA provincial level data indicate that provinces with more complaints have higher sanctions and higher fines (National Bureau of Statistics of China & State Environmental Protection Administration 2000, 2003, 2006). We can use the provincial-level aggregate data from 2001, 2003, and 2006 about complaints, fines, and the number of sanctions, to calculate whether in this period the indicated correlation between complaints and law enforcement work is significant. Such calculations show that complaints do correlate significantly with the number of sanctions ($r_{xy} = 0.32$; $P < 0.05$) and with the average fine per case ($r_{xy} = 0.301$; $P < 0.01$). Our own survey and fieldwork data provide a somewhat more detailed view of how social support affects enforcement. It suggests, as does the official data, that enforcement work benefits from activism from local communities affected by the pollution. Community complaints help EPBs, who are pressed for resources inside the bureaucracy and often obstructed by regulated enterprises from getting information about violations of the law. For example, the Guangzhou EPB was able to act on an increasing number of popular complaints against vehicular pollution to convince the municipal government to adopt a total ban on leaded fuel in the 1990s (Lo & Leung 2000). This would seem to be likely for enforcement bureaus that rely on a reactive enforcement strategy (i.e. where they carry out inspections following citizen complaints). In Kunming and Chengdu, the EPBs used such an approach to deal with resource capacity constraints. They were no doubt helped in their efforts through specific enforcement campaigns since 2002, which had experimented with involving local communities in the detection of violations (Van Rooij 2006a). Societal support for environmental protection is not always welcome, however. The authoritarian political setting of China has rendered enforcement agencies somewhat skeptical of the goodwill of societal groups and the media, and enforcement officials may be uncomfortable performing their duties under community or media pressure (Lo & Leung 2000). What can start as support for enforcement through, for instance, a complaint, may well turn into an unwelcome pressure when the public launches a protest in the event that the complaint is not sufficiently dealt with. In Guangzhou city in the period studied, however, there have been very few such protests.

Two hypotheses can be derived from this about how the perception of enforcement officials about societal support for their work has changed between 2000 and 2006:

H3: Perceptions of societal support for regulatory enforcement in China increased during the period from 2000 to 2006.

H4: The relationship between societal support for regulatory enforcement and enforcement effectiveness was positive and strengthened during the period from 2000 to 2006.

While societal support and governmental support have changed over the last decade and are likely to have had positive effects on enforcement, enforcement itself has also changed. As was highlighted in the introduction, the period 1998–2006 saw a tremendous change in pollution-related law enforcement. Enforcement during this period also seems to have become more proactive, as demonstrated by a 208 per cent increase in the average fine per case between 2001 and 2006 (National Bureau of Statistics of China 1998, 1999; National Bureau of Statistics of China & State Environmental Protection Administration 2000,

2001, 2002, 2003, 2004, 2005, 2006, 2007). Given the increased number of cases, as well as the height of sanctions, it seems likely that:

H5: Perceptions of enforcement effectiveness in China increased during the period from 2000 to 2006.

The levels of governmental and societal support for environmental protection are also likely to interact. The greening of local governments, for example, can provide more space for citizens and civic organizations to participate in environmental policy and voice their pollution-related concerns. Conversely, citizen complaints, media coverage, and local collective action can put major pressure on local governments to take environmental issues more seriously (Lo & Leung 2000). In two previous studies, such interactions were analyzed empirically. Lo and Fryxell (2005) studied the interaction between social and governmental support in Guangzhou in 2000 and found that perceptions of enforcement effectiveness are clearly the highest when both forms of support are present. They also found that when government support is low, strong societal support is perceived negatively. Lo *et al.* (2006) later studied the interaction between social and governmental support in Dalian and found that that enforcement officials in Dalian, who perceive that there are lower levels of societal support, believe that government support can be particularly effective in overcoming or compensating for that deficiency.

Over the last decade it seems likely that the interaction between social and governmental support has probably changed. An important reason for this is that the government's attitude toward public participation has gradually improved. This is evidenced by new rules on public participation in the 2002 Environmental Impact Assessment Law, the expansion of citizens' rights to sue polluters in the 2005 Solid Waste Pollution Prevention and Control Law and the 2008 Water Pollution Prevention and Control Law, and the recent adoption of ministerial Measures on Open Environmental Information. Also in the same period, national enforcement campaigns have started to focus on those violations of law that attracted the most public attention, as well as stimulating public participation during campaign enforcement work (Van Rooij 2006b). At the same time, a new breed of environmental activist group seems to be emerging, more independent of government and somewhat more confrontational with polluters, EPBs, and local governments (Van Rooij 2010).

Based on this, we formulate our final hypothesis as follows:

H6: The form of any interaction between local government and societal support for regulatory enforcement changed during the period from 2000 to 2006.

3. Methodology

3.1. Data collection

The data for this study come from surveys conducted among environmental officials in the Guangzhou EPB. The Guangzhou EPB is responsible for enforcement of the environmental regulations of Guangzhou municipality, the capital city of Guangdong Province located in the Pearl River Delta region.

Guangzhou municipality, with an area of 7,434.6 km² and a population of over 7.5 million, is a reasonably good setting for a study of changes in regulatory enforcement style in pollution control. Economically, it has been among the fastest-developing local economies in China, with a GDP that saw a phenomenal increase from around 5 billion

RMB in the early 1980s to more than 206 billion RMB in 1999, and then to 623 billion RMB in 2006. Environmentally, Guangzhou has experienced serious degradation of its air, water, and other environmental resources, resulting from its rapid economic growth in the last two decades. Politically, senior municipal leaders have increasingly incorporated environmental protection as a major component of the city's development strategy, with a strong desire to give the city a greener image. Socially, Guangzhou citizens have become more critical and less tolerant of industrial pollution as their society enters the fast lane to economic affluence, thus, leading to the emergence of a more environmentally aware society (Lo & Leung 2000). All of these institutional developments have created ample pressure on the Guangzhou EPB to tighten regulatory control over polluting enterprises. To strengthen the empirical basis of this study, we supplemented the survey findings by analyzing the interviews of 11 out of 12 enforcement teams of the Guangzhou EPB.

The same survey was administered in the year 2000 and then later in 2006, each time with the endorsement and support of the EPB in Guangzhou greatly facilitating its administration and enhancing the response rates. Prior to each round of data collection, a briefing session was held with representatives at each field office. These representatives in turn helped to distribute the questionnaires to officials within their units, collected completed questionnaires, and returned them. The respondents were all "street-level" officials within the Guangzhou EPB who were either currently or formerly responsible for carrying out enforcement duties over industrial enterprises in Guangzhou. Altogether, 202 usable responses were received from a total of 250 distributed in 2000, and 154 of 220 were received in 2006 – response rates of 81 per cent and 70 per cent, respectively. Because of the low turnover in enforcement officials (~5 per cent per annum), the samples were reasonably comparable. Indeed, because over 70 per cent of the respondents had over six years of job tenure, most of the respondents were working for the agency during both data collection periods. As each survey was administered anonymously, however, we were unable to pair the data for such cases.

The interviews of enforcement teams were conducted between August 2006 and July 2007. In the majority of interviews, at least one leading official (team or deputy team leader) was present along with two to three enforcement officials from their team. These semi-structured interviews were arranged by the Guangzhou Research Institute of Environmental Science, the research arm of the Guangzhou EPB (GZEPB), with questions focusing on seven aspects of regulatory control, namely major tasks of enforcement, regulatory strategies, enforcement difficulties, experiences in enforcement, sources of enforcement pressure, possible improvement, and government and public expectations.

The period between 2000 and 2006 covered in this study is indeed a turning point in Guangzhou's environmental protection. The alarming pollution statistics throughout the 1990s triggered the municipal government's determination to green its polluting strategy of development at the turn of the 20th century. This paradigm shift paved the way for the city to actively seek urban sustainability, manifested in its release of local *Agenda 21* in 1998, followed by the announcement to transform Guangzhou into a national environmental model city. As a result, local contextual setting has rapidly changed in favor of tougher regulatory enforcement of environmental regulations. Specifically, enforcement officials were advised to modify their enforcement styles in three ways: (i) to be more assertive in collecting pollution discharge fees; (ii) to become more strict with polluting enterprises (i.e. regardless of their "connections"); and (iii) to

enforce the legal requirements of two specific policies – the “three synchronizations” and the “imposition of deadlines on enterprises to control and reduce their pollution levels” (Pearl River Environment News 2006). Most notably, the amount of environmental investment was drastically increased, from 13.67 billion RMB to 22.25 billion RMB, supported by the vigorous implementation of the Cleaner Production Program to prescribe a deadline for major polluting enterprises to comply with emissions standards by subsidizing them to upgrade their production technologies and pollution treatment facilities. All these efforts had led to the achievement of model city status in 2007. Table 1 compares environmental standards in Guangzhou for the periods 2000 and 2006, indicating visible improvement.

3.2. Measurement

3.2.1. Control variables

Three variables were used to control for individual variations among the enforcement officials:

- 1 Gender. The respondents' gender was dummy coded (i.e. “0” for males and “1” for females);
- 2 Age. The respondents' age was measured directly in years at the time of the survey;
- 3 Job Tenure. The number of years a respondent had worked as an enforcement official for the EPB.

3.2.2. Local government support for regulatory enforcement

Six questions were employed to measure the extent to which the environmental officials perceived that specific local governmental bodies³ were supportive of their efforts to enforce environmental regulations. All items were measured on a 5-point Likert-type scale. Analysis indicated that a scale comprised of these items was internally consistent ($\alpha = 0.908$). Indeed, the high level of internal consistency here could be interpreted as either indicating a close conformance among various local government bodies (i.e. their all being “on the same page” with respect to regulatory enforcement) or that the enforcement officials did not discriminate among these bodies in forming what amounts to an overall perception.

3.2.3. Societal support for regulatory enforcement

Five items asked about community support (i.e. from the public, media, local business, local NGOs, and “other social groups”). A scale comprised of these items also showed a high level of internal consistency ($\alpha = 0.856$). Once again, this consistency could reflect conformance among these bodies or an overall perception extended to each societal group.

3.2.4. Perceived enforcement effectiveness

Given the difficulty of accessing objective measures of enforcement effectiveness, we used the self-perception of the respondent as a rough measure across multiple levels of overall agency effectiveness (that is, the individual-, unit-, and agency-levels). We used this measure because we desired a measure of the respondents' generalized views of enforcement effectiveness. Self-reports are clearly not a perfect substitute for objective measures

Table 1 Environmental standards and quality in Guangzhou municipality (2000 and 2006)

Item	Unit	Mandatory standard	2000	2006
Atmospheric environment	Respirable suspended particulates (RSPs)	0.10†	0.158	0.076
	Sulphur dioxide	0.15†	0.045	0.054
	Nitrogen dioxide	0.12†	0.061	0.067
	Acid rain	n/a	62.30%	75.40%
Water environment	Industrial waste water discharged	Total volume discharged (up-to-standards discharge) (million tonnes)	241.23 (217.32)	204.45 (196.29)
	Residential waste water discharged	Up-to-standards discharge percentage	90.09%	96.01%
		Million tonnes	713.11	1,078.58
Acoustic environment	Sources of drinking water	Percentage of drinking water meeting the water quality standard	98.30%	67.86%‡
	Sewage management	Sewage treatment rate	26.28%	71.64%
	Traffic noise (main roads)	leq dB (A)	69.10	69.40
	Regional environmental noise	leq dB (A)	54.2	55.2
Total investment in environmental protection/percentage of GDP	Billion yuan	–	13.67	22.25
	%	–	5.75%	3.67%

†Stands for Grade II Standard, which is applied in urban residential and commercial areas.

‡The dramatic reduction in the percentage of drinking water that satisfies the water quality standards is partly due to the measurement change in the new policy announced in the 11th National Five-Year Plan (2006–2010).

Sources: Guangzhou Statistical Yearbook 2007 and 2001; Guangzhou Environmental Protection Bureau.

Atmospheric environment: http://www.gzepb.gov.cn/zwgk/fgybz/dqjzlbz/200311/t20031126_40979.htm.

Acoustic environment: http://www.gzepb.gov.cn/zwgk/fgybz/zsbz/200311/t20031126_40902.htm.

Table 2 Principal components analysis of local government support, societal support, and enforcement effectiveness items

	Component		
	1	2	3
<i>Local government support for regulatory enforcement</i>			
1) there is enough support from city government on enforcement	0.864	0.266	-0.013
2) there is enough support from city mayor on enforcement	0.830	0.367	-0.004
3) there is enough support from municipal political consultation committee on enforcement	0.723	0.432	0.035
4) there is enough support from city government departments on enforcement	0.654	0.289	0.053
5) there is enough support from municipal people's congress on enforcement	0.809	0.366	0.064
6) there is enough support from local courts on enforcement	0.706	0.187	0.193
<i>Societal support for regulatory enforcement</i>			
1) there is enough support from the public on enforcement	0.222	0.788	-0.020
2) there is enough support from the mass media on enforcement	0.266	0.780	0.067
3) there is enough support from business on enforcement	0.348	0.656	-0.016
4) there is enough support from social environmental organizations on enforcement	0.340	0.761	0.047
5) there is enough support from other social organizations on enforcement	0.312	0.758	0.105
<i>Enforcement effectiveness</i>			
1) overall, my unit is effective in enforcement	0.275	-0.047	0.801
2) overall, the environmental agency is effective in enforcement	0.127	0.000	0.910
3) overall, I am effectively implementing environmental laws	-0.198	0.149	0.765

Numbers in boldface indicate factor loadings.

of enforcement effectiveness. Nevertheless, literature exists that uses perceived enforcement effectiveness in analysis and provides evidence showing strong relationships between actual enforcement data and subjective estimates by enforcement personnel (Burby & Paterson 1993; May & Winter 1999). Although respondents' assessments are quite possibly subject to bias, such responses should provide an adequate basis for analyzing relative differences over time (i.e. under the assumption that the influence of bias remains constant). In our sample, the majority of respondents agreed or strongly agreed that regulatory enforcement at the unit and agency level is effective. In response to the statement that the unit was effective in implementing environmental regulations, for example, 9 per cent of the officials strongly agreed, 74 per cent agreed, 14 per cent were neutral, disagreed, or strongly disagreed, and 3 per cent gave no response.

As before, each of these items was presented in a 5 point Likert-type format ($\alpha = 0.765$). A principal components analysis of support and the effectiveness items is reported in Table 2. Altogether, these three components accounted for 71.5 per cent of the variation among the items and, as is evident in this table, each item appears to load on the appropriate component with relatively little problem with cross-loadings.

3.3. Analysis

Descriptive statistics and tests of differences in means for the 2000 and 2006 results were performed using SPSS. The regression models predicting enforcement effectiveness,

however, were estimated using AMOS 7.0, which provides maximum likelihood estimates (Amos Development Corporation 2007). The main purpose of using AMOS was that it more easily permitted statistical tests of differences in a single model for two (or more) samples. When constraining a path to be equal in the two samples and simultaneously estimating parameters, one degree of freedom is freed, thereby providing an χ^2 test of their equivalence.

4. Results

The means, differences, and corresponding *t*-tests of all variables are reported in Table 3. As is evident in the table, there were no significant differences among the control variables. On the other hand, there were significant shifts involved for the variables related to both local government and societal support.

Among the local government support items, small and non-significant changes were found in most bodies. This is largely consistent with observations that although the central government had genuinely attempted to give environmental considerations greater priority in local governance, local government officials intransigently adhered to pro-growth policies. One notable exception to this is the Municipal Political Consultation Committee (MPCC), which appeared to have significantly increased its support for regulatory enforcement (i.e. from a mean of 3.16 to 3.50; $P < 0.001$). This is consistent

Table 3 Comparison of sample demographics and stakeholder support for environmental protection: 2000–2006

Item	2000 (<i>n</i> = 202)	2006 (<i>n</i> = 154)	Δ (2006–2000)
<i>Demographic variables</i>			
Gender (0 = male; 1 = female)	0.39	0.33	–0.06
Age (in years)	37.4	37.5	0.01
Job tenure (years in department)	10.06	10.39	0.33
<i>Perceptions of local government support</i> ($\alpha = 0.908$)			
Municipal government	3.44	3.52	0.08
City mayor's office	3.39	3.46	0.07
Municipal political consultation committee	3.16	3.50	0.34***
Other departments in the city	3.02	3.14	0.16
Municipal people's congress	3.48	3.51	0.03
Courts	3.47	3.45	–0.02
<i>Perceptions of societal support</i> ($\alpha = 0.856$)			
General public	3.16	3.35	0.19**
Mass media	3.19	3.42	0.23***
Business	2.92	2.97	0.05
Environmental organizations	3.04	3.45	0.41***
Other social organizations	2.86	3.24	0.38***
<i>Perceptions of enforcement effectiveness</i> ($\alpha = 0.841$)			
Of unit	3.99	3.95	–0.04
Of agency	3.96	3.95	–0.01
Of individual	3.94	3.90	–0.04

* $P < 0.10$; ** $P < 0.05$; *** $P < 0.01$.

Table 4 Correlations of indices of stakeholder support for environmental protection, enforcement effectiveness, and control variables

	1	2	3	4	5	6
1) Gender		-0.017	0.011	-0.070	-0.161*	0.169*
2) Age	-0.051		0.640***	0.069	-0.004	-0.246***
3) Job tenure	0.045	0.532***		0.104	-0.022	-0.109
4) Index of local government support	-0.135*	0.088	0.102		0.649***	0.125
5) Index of societal support	-0.109	-0.014	0.050	0.481***		0.112
6) Index of perceptions of enforcement effectiveness	-0.013	0.105	0.133	0.209***	0.144*	

* $P < 0.10$; ** $P < 0.05$; *** $P < 0.01$.

The correlations for the 2000 sample are given in the lower left portion of the table; those for the 2006 sample are in the upper right.

with the observation that MPCCs have become increasingly outspoken in terms of articulating the interests and concerns of the general public on social and environmental issues. This provides selective support for our first hypothesis, that there has been an increase in local government support for regulatory enforcement.

With the exception of the local business community, substantial increases in support were found for all categories of societal support, with the largest change being for “environmental organizations” (i.e. including both independent and government-operated NGOs). Strongly significant ($P < 0.01$) increases were also observed for the miscellaneous category of “other social organizations” and the “mass media,” and more modest ($P < 0.05$) increases in support were found for the “general public.” In general, this is consistent with qualitative and anecdotal evidence suggesting that societal institutions are better informed on environmental issues, and that with increases in income per capita they may be reaching a level where they are beginning to care more about the state of the environment than just meeting immediate economic needs (Van Rooij 2006b, 2010). Taken together, these results provide ample support for the third hypothesis, which predicted increases in societal support for regulatory enforcement.

Finally, no significant differences are found in the three items related to enforcement effectiveness (i.e. at the agency, unit, or individual levels). This does not support our second hypothesis, which anticipated improvement in enforcement effectiveness based on the strong push for better enforcement by the Guangdong Provincial and Guangzhou Municipal Governments during this period. Assuming the validity of these comparisons, this would suggest that either enforcement rigor remained the same during this period or possibly that it may have increased, but in the presence of a corresponding increase in violations or enforcement duties.

The correlations among the control variables and indices formed from the above items are given in Table 4, with those for the 2000 sample given in the *lower left* portion and those for the 2006 sample in the *upper right* area. Within the table, one can observe evidence of a number of strong and significant bivariate relationships. The highest correlations are for the relationships between age and job tenure ($r_{xy} = 0.64$ in 2006 and 0.53 in 2000 – note that this is surprising given the job stability of this sample) and for the

Table 5 Regression coefficients for 2000 and 2006 samples in predicting perceived enforcement effectiveness

	Step 1			Step 2			Step 3		
	Control variables			Main effects			Interactions		
	2000	2006	Δ 2006–2000	2000	2006	Δ 2006–2000	2000	2006	Δ 2006–2000
<i>Control variables</i>									
Gender	-0.013	0.165	0.178	0.028	0.181	0.153	0.037	0.202	0.165
Age	0.004	-0.017	-0.021	0.004	-0.017	-0.021	0.004	-0.016	-0.020
Job tenure	0.007	0.005	-0.002	0.005	-0.005	0.010	0.004	0.002	-0.002
<i>Main effects</i>									
Local government support				0.108	0.059	-0.049	0.164	0.050	-0.114
Societal support				0.032	0.060	0.028	-0.014	0.056	0.070
<i>Interactions</i>									
Local government \times societal support							0.204	-0.184	-0.388
<i>Model information</i>									
R ²	0.029	0.091		0.066	0.114		0.129	0.152	
Δ R ²				0.037	0.023		0.063	0.038	

Significant coefficients are in boldface; controls and main effects, $P < 0.05$; interactions, $P < 0.01$.

indices of local government and societal support ($r_{xy} = 0.65$ in 2006 and 0.48 in 2000). Correlations at this level could lead to problems associated with multicollinearity, especially involving interaction terms. Accordingly, we adopt the approach proposed by Aiken and West (1991) of centering the variables prior to creating the interaction terms in an effort to mitigate this possibility.

Estimates for the regression models are given in Table 5, which proceeds hierarchically from left to right. As is evident in this table, in Step 1 only the control variables are regressed on perceptions of enforcement effectiveness. For the 2000 sample, these three variables contribute very little explanatory power ($R^2 = 2.9\%$), while for the 2006 sample they perform somewhat better ($R^2 = 9.1\%$). In 2006 it can be observed that female enforcement officials were significantly more likely ($P < 0.05$) to report higher levels of enforcement effectiveness ($\beta = 0.165$; $P < 0.05$), while older officials tended to report *less* enforcement effectiveness ($\beta = -0.017$; $P < 0.01$). In addition, the third column ($\Delta 2006-2000$) reports the difference between the coefficients, with the statistically significant changes in boldface. Here it is observed that the coefficients for gender and age just discussed represent significant shifts from 2000 to 2006. This could possibly be the result of females viewing the policy reforms of SEPA and their provincial EPB relatively favorably, while older enforcement officers are much more skeptical about them.

When the main effects are entered, the model's power improves modestly to $R^2 = 6.6\%$ (2000) and 11.4% (2006). The importance of government support is underscored with a significant, positive coefficient ($\beta = 0.108$; $t = 1.97$, $P < 0.05$), but only in 2000. The relationship with societal support, on the other hand, is not significant in either sample, and there are no increases in support evident from 2000 to 2006. Clearly, these results do not conform to the expectations stated in our fourth and fifth hypotheses, with the slight exception that local government support was positively related to perceptions of enforcement effectiveness in 2000 (supporting one component of the fourth hypothesis, which predicted a positive relationship). However, this hypothesis is not supported in the larger sense of what we were anticipating.

In the third step of our regression sequence, the interaction term (i.e. that associated with the joint effect of local government in combination with societal support) was entered. Here the R^2 s improved significantly in both samples (to 12.9%; $\Delta R^2 = 6.3\%$ in 2000 and to 15.2%; $\Delta R^2 = 3.8\%$ in 2006). Indeed, both coefficients were strongly significant ($\beta = 0.208$; $t = 3.47$; $P < 0.001$ in the 2000 sample and $\beta = -0.186$; $t = 2.62$; $P < 0.01$ in the 2006 sample). Thus, in contrast to the main effect models, which seemed to indicate that societal support was relatively *unimportant*, these models indicate that societal support takes on a measure of significance as a moderator of the relationship between local government support and enforcement effectiveness.

In addition, the coefficients have opposite signs, indicating that the form of the interaction also shifts substantially from 2000 to 2006. In order to explore this possibility, interaction plots are given in Figure 1.

An inspection of these plots confirms that the form of these interactions changed between the two periods of data collection. Taken together with the significant coefficients for each interaction term, this provides strong support for our sixth hypothesis, which expected significant interactions and, particularly, a change in their form.

Looking first at the lines associated with perceptions of low levels of local government support, in the 2000 sample the slope is clearly negative, indicating that at that time, higher levels of societal support somehow interfered with (or ran afoul of) local governments' low priorities for regulatory enforcement. This could be restated to say that high levels of societal support for environmental regulatory enforcement appear to be at odds with local government's pro-growth priorities. This certainly seems understandable, as during this period one might imagine that societal support was probably viewed as unwelcome meddling in government affairs and could have engendered something of a negative reaction in response.

However, by 2006 the slope of this line had shifted to become positive, indicating that when local government support for regulatory enforcement is low, societal support seems to intervene so as to compensate in some manner. This also seems to fit with a greater legitimacy given to the media and (certain) environmental groups during this time, as central authorities began to increasingly view them allies in exposing regulatory infractions, for it was during this period that central government started pushing for a more "balanced" growth (i.e. between economic gain and environmental degradation). This may also suggest, and possibly be a result of the fact that local governments had become more open, attentive, and, in instances, perhaps even fearful of public opinion and publicity related to lax enforcement.

Turning attention now to the lines associated with *high* levels of local government support, we see the slopes of the lines in the plots shift once again, albeit somewhat less dramatically. As can be seen in the plot for the year 2000, societal support for regulatory enforcement appears to be complementary to local government support for regulatory enforcement, resulting in the highest levels of perceived effectiveness. In comparison, by the year 2006 this slope had turned slightly negative. One apparently plausible explanation for this change could be associated with a rather fundamental change in how enforcement officials themselves viewed societal groups as allies in their efforts to monitor and enforce regulations. As previously mentioned, since the year 2000 the central government had been much more tolerant of environmental NGOs and had also given a qualified "green light" to the media for the purposes of exposing various abuses (i.e. corruption, pollution, and tainted products). During this same period, the public had

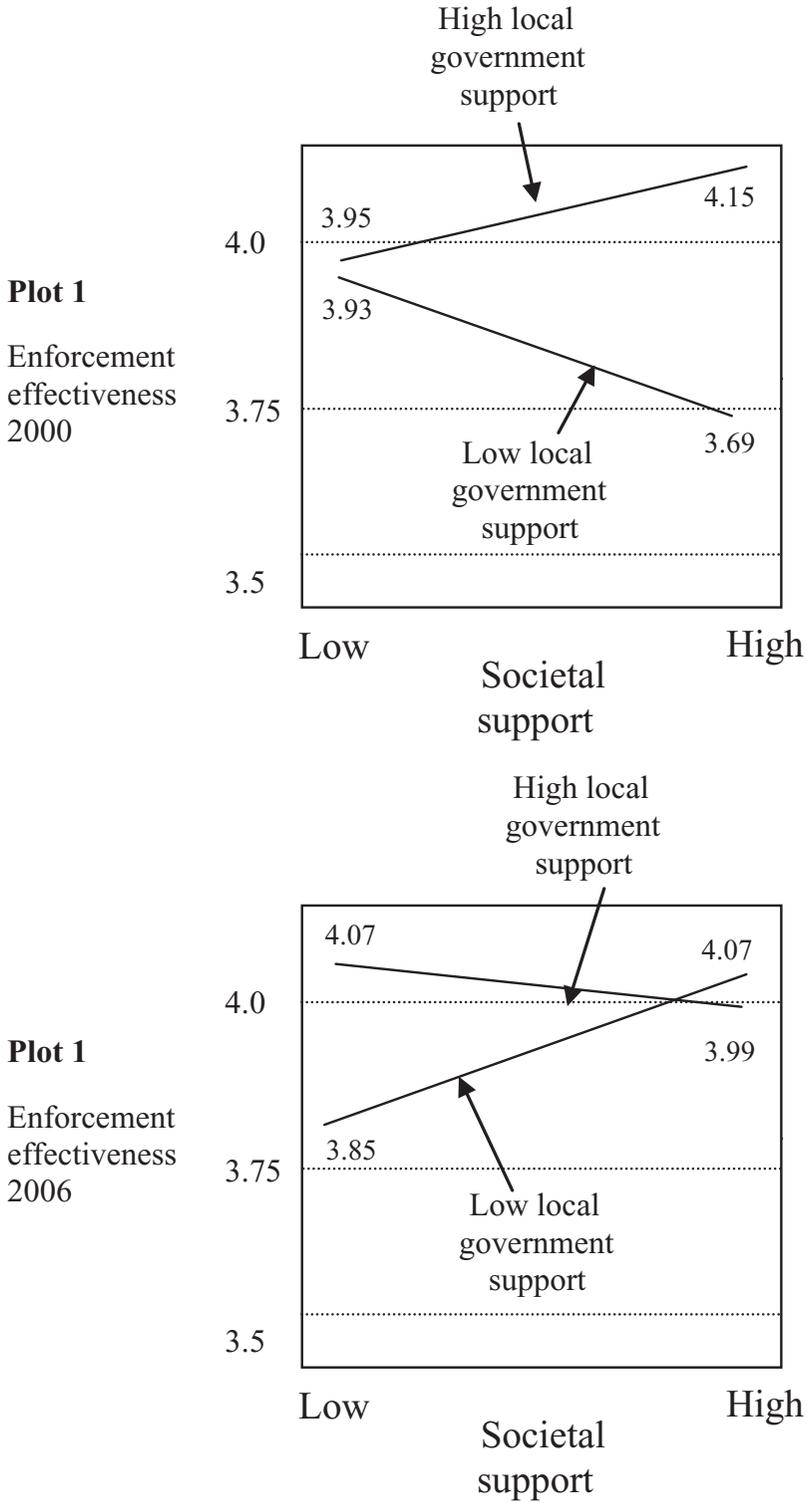


Figure 1 Interaction plots for local government and societal importance: 2000 and 2006. Numbers in boldface indicate factor loadings.

proven to be considerably more outspoken, as evidenced by a marked increase in the incidence of “mass demonstrations” during this period, many having to do with land seizures and industrial pollution. In response, the local EPBs began engaging in public consultations on some matters, which to seasoned technocrats may have been perceived as simply slowing down or getting in the way of enforcement. This would be the case, for example, when societal groups were viewed as being uninformed, uneducated, or unreasonable. Consequently, we might speculate that in a context in which authorities are beginning to experiment with public consultations, such efforts may be viewed by enforcement officials themselves as taking unnecessary time or diverting resources away from actual enforcement actions. In sum, our conjecture is that in 2000 (i.e. before their emergence as a more aggressive influence), local governments supporting regulatory enforcement looked at societal groups as a useful albeit relatively unimportant ally, but by 2006 they had become a more outspoken distraction.

For better or worse (in the eyes of the enforcement officials), it seems likely that certain societal groups have become relevant, if not occasionally important, stakeholders. Some evidence of this can be found in changes in the response to an item in the survey that stated, “in the absence of societal support, it is difficult to enforce environmental regulations.” In the 2000 sample, the mean response to this item was 2.69 (corresponding to slight disagreement), but in the 2006 sample it increased by 0.80 units on the Likert scale to 3.49 ($t = 8.9, P < 0.001$).

5. Discussion

This paper advances our understanding of change in China’s environmental enforcement regime, focusing on how the governmental and social contexts jointly influence perceptions of enforcement effectiveness. In so doing, this study broadens our earlier work on variation in enforcement, which examined changes in enforcement styles and perceived effectiveness (Lo *et al.* 2009; Van Rooij & Lo 2010), and on social and governmental support for enforcement (Lo & Fryxell 2005). The most important changes in the 2000 to 2006 period appear to have occurred in societal support for environmental regulations. Consistent with prior studies (cf. Lo & Fryxell 2005; Van Rooij & Lo 2010), these results show how complex societal support relates to environmental law enforcement in China, a fact further underscored by this analysis of changes that occurred over a six-year time span.

Considering government support, except for the Municipal Political Consultative Committee (MPCC), no other local government units were perceived by the enforcement officials to have increased their support for enforcement during the period. On the one hand, this result probably reflects the reality that economic development has remained the local government’s top priority. When asked directly if the local government has given enough support for their work, ambivalent views were expressed by our interviewees – some mentioned that local government leaders have paid more attention to environmental protection, but some also mentioned that economic development would be given priority if it did conflict with environmental protection. Indeed, there was a general grievance among all team leaders interviewed that the additional policy and resource support provided for environmental protection in this period had not been able to match the increase in the magnitude of the enforcement duties in a context of rapid economic development. On the other hand, it shows that the MPCC has increasingly become more

concerned and articulate on environmental protection than those of the core local government, with membership broadening to include entrepreneurs, academics, and other “civic” leaders from legal professions and social organizations (Yangcheng Wanbao 2012). This contrasts to the narrow focus of local government units. Examples abound of municipal and provincial PCC members going “aggressive,” proposing new measures in pollution control and making public statements regarding air quality issues (China Review News 2012; Nanfang Dushi bao 2012). In this respect, the number of motions (*tigan*) related to green issues raised by the MPCC members drastically increased from 36 in 2000, to 132 in 2006, thanks to the simpler motion procedure of local people’s congress. In addition, they have taken more initiatives to actively communicate with the GZEPB, including conducting bureau visits to talk directly with environmental officials. This greening trend of MPCC has, thus, made the enforcement officials see the MPCC as their closer ally within the government to support stricter regulatory control of pollution.

More specifically, this paper reinforces (Lo *et al.* 2006) the importance of interactions between local government and societal support, and how they are evolving. Whereas in 2000 we found that societal support was most influential in the presence of government support (Lo *et al.* 2006), by 2006 it seemed that societal support had a compensatory effect when local government support was low. Based on interviews and other sources, our interpretation of these findings would be that in 2000 society was largely impotent to aid enforcement when there was limited local government support; however, by 2006, societal forces had become strong enough to overcome a lack of local government backing, especially against a background of rather strong support cascading down through the provincial levels from central authorities. This highlights the growth of societal forces, which has been developing since the late 1990s (Ho & Edmonds 2008; Van Rooij 2010), and has been reinforced by legal and political reforms initiated during that period (Van Rooij 2010).

Our finding of a joint *negative* effect of local government support in the presence of societal support in 2006 was surprising and warrants additional speculation as to what might have brought it about. To understand this, one should consider that over this period, environmental officials had to cope with a rapid increase in citizen complaints (Van Rooij 2010) and increased critical media reporting, while usually lacking the capacity and authority to handle such complaints to the satisfaction of the complainants. During this same period, government authorities at all levels were also preoccupied with a growing trend of social unrest. Indeed, much of this unrest was grounded in incidents related to land seizures and industrial pollution. Consequently, internal incentive structures have been strengthened for Chinese bureaucrats, forcing them to respond to complaints, petitions, and/or protests quickly and locally – often accommodating demands wherever they can to contain the spread in scale and pace of contentious activities (Su & He 2010; Liebman 2011a). Together these influences have undoubtedly increased the pressure on environmental agencies to be responsive in appeasing complainants, as failure to do so can have strongly negative consequences. Indeed, Cheng’s (2011) research underscores the extent of these pressures by pointing out that in a large city in south-eastern China, local environmental enforcement officials lose up to 20 points for each petition related to their field of work that advances to the provincial level. A loss of 60 points (as few as three such reports) could lead to job dismissal. In this context, increases in societal and local government support can easily become a burden on local regulators. To make matters even more difficult for the regulators, citizens have learned how to use

these incentive structures to their advantage (Su & He 2010; Liebman 2011b). In this respect, a strong impression we developed from the interviews, was the feeling among virtually all of the enforcement team leaders of being overwhelmed by the tremendous workload. In the words of one team leader:

. . . in 1995, we received 225 cases of environmental complaints; the next year, we had 480 cases; and the next year, we had 850 cases. In 1999, the total number of environmental complaint cases exceeded 1,000, and then it reached 2,261 in the year of 2004 and 2,188 in the year of 2005. In the year 1995, the emissions fees we collected totalled RMB 3.5 million; in 2005, they reached 12.4 million; and in 2006, they reached 12.8 million. The total workload now is almost eight to 10 times of the workload before . . . Usually we don't have lunch before 3 or 4 p.m. on a workday, and overtime is quite common now. For example, this year we have had more than 100 days with overtime. . . .

Some team leaders also mentioned cases in which environmental complaints were over-used or misused. One, for example, mentioned that in some cases, even when the firms had met regulatory requirements, local residents still filed complaints against these firms. Thus, for environmental regulators, increased societal support in combination with incentive structures to respond to society may not be entirely welcome, as they turn support into pressure and raise expectations enforcement agencies are unable to meet.

Local government environmental support may make matters worse, as it provides a strong signal for citizens to issue complaints and even organize collective action and place extra pressure on environmental authorities to respond to citizen complaints. As indicated in the interviews with the enforcement teams of the GZEPP, within a context of high government (manifested in the institution of the mayor's hotline for the public to lodge complaints against pollution) and societal support, all of this has made environmental enforcement agencies risk averse, prioritizing complaints made with the local government and seeking to handle complaints as formally and according to the book as possible to reduce possibilities for blame. For example, the enforcement officials told us during the interviews that they now spend more time responding to citizens' complaints and petitions, which often results in these complaints/petitions driving the enforcement team's monitoring priorities. In addition, the growth in the number of citizen complaints and greater media exposure has also led enforcement team staff to adopt a more formalistic approach to enforcement in order to avoid criticism. Finally, one enforcement team leader complained that the media tend to be sympathetic to pollution victims and critical of the EPB regardless of whether it lies within the EPB's power to deal with the pollution issue in question. This is very much in line with findings reported in an earlier paper demonstrating a shift toward a more formal style of enforcement (Lo *et al.* 2009). Thus, we find an indication that the shifts in governmental and societal support and those in enforcement styles are related, indicating that too much support can become a burden that enforcement agencies handle through formalism. It also more broadly shows that China's recently introduced bureaucratic incentive structures to quell social unrest may have the unintended consequence of undermining the enforcement needed to prevent and control the illegal behavior causing the grievances against which the unrest is directed.

One limitation of this study that constrains our ability to speculate further on these interaction effects is that our measures sought the overall perceptions of support from

various bodies (by local government and societal groupings), but did not distinguish *how* such support was exercised. For example, it seems quite likely that interactions between local government and societal support for regulatory enforcement would probably be enhanced in the event that local government support was more visible (e.g. reporting “hot lines,” public statements, arrests of egregious violators), than those forms that are less visible (e.g. budget allocations, internal communications). Indeed, questions regarding how specific mechanisms of regulatory support encourage or discourage regulatory enforcement should be examined in future studies. In addition, it is also possible that interaction effects could vary by body. For example, an interaction related to mayoral support with the support of the media could be different than, say, that involving the MPCC with local environmental groups. Not only would such an examination have led to an unwieldy number of interaction plots to sort out, but would likely not have born much fruit given the high levels of internal consistency in both our measures.

6. Conclusion

This paper makes several contributions to the literature on regulation and regulatory enforcement. First, it shows that in authoritarian settings there can be a dynamic development of decentering of regulation, where the regulation of risk is no longer a simple matter of the state setting and enforcing norms to guide regulatory behavior in a mono-directional manner. In the period 2000–2006 we have documented a complex strengthening of decentered authoritarian regulation in Guangzhou. In 2000 we found that strong social and political support acted as a catalyst to aid enforcement, while strong social support was unable to provide a counterbalance for weak government support. As such, social forces only had an influence if they did not run against political forces within the authoritarian state. By 2006, this situation had changed dramatically, and social forces only positively improved enforcement in situations where government support was perceived to be low, while high social support had a slight negative effect when government support was high as well. Thus, by 2006, social actors could play a much stronger regulatory role as they could counterbalance a fragmentation within the authoritarian state, when political support was lacking for the enforcement of laws made by the central level.

Second, it shows the intricacy and the dynamic of the interaction between the different social and governmental forces that together constitute our contemporary forms of regulatory governance (Kagan *et al.* 2003). It shows the importance of research about the political and social context of regulatory enforcement, and it signals the need for deeper comparative research in this area, which has remained relatively understudied. While earlier studies have shown that there can be positive effects of social activism on environmental law enforcement, essentially in a context of low government support and enforcement capacity (Scholz & Wei 1986; Frank & Lombness 1988; de Mello Lemos 1998; Stuligross 1999; Gunningham *et al.* 2003; Kagan *et al.* 2003; Hutter & Jones 2007), we now know that societal support can also have negative effects, even when combined with support from local authorities.

Third, the findings add to our understanding of change over time. This is one of the first studies (i.e. Gunningham *et al.* 2003) that has attempted to understand changes in enforcement in relation to changes in local government and societal support over a period of time. Most former studies of variation over time have focused on central level

political changes, economic crisis, or scandals or incidents (Kagan 1994; Sparrow 2000). This paper shows how large the effects can be even over a short period of time and even without major political shifts, economic changes, or scandals. In contrast with Gunningham *et al.* (2003), it shows that more social and local government support may not always lead to better implementation of the regulations.

This paper also contributes to our understanding of current developments in the Chinese political, social, and legal spheres. Recent literature about labor law (Su & He 2010), court petitions (Liebman 2011b), and local level environmental authorities (Cheng 2011) has looked at the latest changes in the interaction between bureaucrats and citizens. This body of literature evidences greater citizen activism and participation, and how local bureaucrats have been forced to meet activist citizen demands, however, without better capacity or authority to do so. The findings here provide a first quantitative analysis of these developments, showing how, indeed, more citizen activism influences local level bureaucrats, and also how a combination of strong citizen action with local government support can become a burden instead of a support for enforcement.

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Notes

- 1 Here the number of sanctions is divided by the sum of five main air, water, and solid waste pollution indicators. This case/pollution ratio is used to show how the number of cases developed apart from the development of pollution and, thus, indirectly the number of violations.
- 2 By law enforcement here, we refer to EPB administrative enforcement of China’s industrial pollution laws, most notably of its pollution discharge fee system, its environmental impact, and three synchronization systems, its permit system, and its specific commands and prohibitions. EPB administrative enforcement authority is based chiefly on the Environmental Protection Law (1989) (arts. 35–37, 39), the Environmental Impact Assessment Law (2002) (arts. 31, 33), the State Council Administrative Regulation on Pollution Discharge Fee Collection (2003) (arts. 21–23) and the country’s chief sectoral industrial pollution laws including the Air Pollution Prevention and Control Law (2000) (arts. 46–49, 51–52, 54–57, 60–61), Water Pollution Prevention and Control Law (2008) (arts. 70–77, 81–82), Marine Environmental Protection Law (1999) (arts. 73–78, 80–83, 88–89), Noise Pollution Prevention and Control Law (1997) (arts. 48–52, 55–56, 58–59), and Solid Waste Prevention and Control Law (2004) (arts. 68–71, 73–77, 81–82). Methodologically, we have not been able to focus and compare the enforcement of the different types of laws mentioned here, but, rather, asked respondents to discuss their overall administrative enforcement work, and social and government support for such work.

- 3 We use a broad conception of the local government to not only include the executive branches, but also the judicial, lawmaking, and consultative branches that within China's party-state cannot be separated fully. Such a concept received the endorsement of the leading officials of the Guangzhou Environmental Protection Bureau.

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