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Organizational Membership and Environmental Ethics: A Comparison of Managers in State-owned Firms, Collectives, Private Firms and Joint Ventures in China

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Summary. — This study empirically examines the relationship between organizational type and the environmental, ethical orientation of managers in the People's Republic of China (PRC) on three dimensions—stewardship and long- and short-term utilitarianism. It was found that Chinese managers uniformly self-report strong ethical commitments to environmental protection. In addition, organizational type was found to be a significant predictor for the different ethical dimensions. Overall, managers in state-owned firms uniformly reported the strongest values. Managers in private firms, on the other hand, self-reported lower values and appeared relatively more skeptical of emergent utilitarian arguments that economic performance and environmental performance are compatible in the short term. © 2001 Elsevier Science Ltd. All rights reserved.

Key words — environment, Asia, China, ethics

1. INTRODUCTION

The condition of the natural environment in the People's Republic of China (PRC) is among our most serious global concerns (Sims, 1999; World Bank, 1997c). While China's economic performance over the last two decades (as measured by growth in GDP) appears enviable, it has consumed vast quantities of natural capital in achieving this feat (Economy, 1999; World Bank, 1997b). Indeed, there is substantial evidence that much of the Chinese "economic miracle" has come at the expense of numerous other quality-of-life dimensions (Edmonds, 1994; McElroy, Nielsen, & Lydon, 1998; Smil, 1993; World Bank, 1997b). Focusing just on environmental considerations, the filthy air, depleted fish stocks, encroaching desertification, and increased frequency of natural disasters (e.g., flooding on the Yangtse River, species loss, and desertification) are especially noteworthy (Lotcpeich & Chen, 1997; Smil, 1993). This deterioration is underscored by recent reports that indicate many Chinese cities are among the "dirtiest" and the most polluted in the world (Davis, 1999; World Resources Institute, 1998, 2001). Indeed, it is with considerable irony that many factories had to be closed in the run up to the recent "50th Anniversary Celebrations" so that visiting dignitaries could better enjoy the "air show" (a military aircraft flyby).

Beneath these seemingly localized problems lurk truly global concerns. Among the most problematic is the potential carbon load on the earth's atmosphere that will attend greater material affluence in the PRC, especially as the population trades in bicycles for automobiles and as China continues to rely on high sulfur coal to fuel its rapid economic expansion (World Bank, 1997d). Other concerns include: ozone depletion due to continued use of CFCs, species loss due to destruction of habitat, and overall contamination to the world's oceans due to the huge amount of untreated effluent. These serve as reminders that environmental issues in China are, in fact, global issues. As Sims (1999, p. 1227) put it, "China casts a long shadow over the 21st century."

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Fortunately, the Chinese government has recently begun to turn its attention to these problems (Lo & Leung, 1998). In recent years numerous new laws and regulations have been passed (Palmer, 1998) and the command and control political structure in China can produce fairly rapid implementation of programs on specific problems. For example, the State Government was able to eliminate harmful two-cycle microtaxis (''miàn-de'') in Beijing within a year by mandating a program for their complete elimination. It is likely, however, that such measures may prove to be ''too little, too late'' and, regardless, other types of environmental problems (e.g., desertification, deforestation) simply cannot be tackled with such ease.

Sims (1999) highlights a number of institutional and contextual obstacles that limit such successes. Among the most important is that the State Environmental Protection Administration (SEPA, 1999) often lacks authority *vis-à-vis* important industrial ministries, fragmented bureaucratic complexity and overall political turmoil in reconciling conflicts among competing agencies. As a result, government decrees and regulations are unlikely to have an adequate impact on most environmental problems (Lo & Tang, 1994; Ross, 1988; Sinkule & Ortonlano, 1995; Tang, Lo, Cheung, & Lo, 1997).

At the same time, the Chinese government is exploring other policy mechanisms. Even in the early 1990s China's *Agenda 21* broadly endorsed more market-oriented approaches (China, 1993). This includes the use of a broad range of economic instruments (i.e., user taxes, tradable permits, elimination of subsidies), endorsement of the ''polluter pays'' doctrine, educational initiatives, and its endorsement of various ''voluntary initiatives'' (Lo & Leung, 1998; Sinkule & Ortonlano, 1995). Central to these ideas is the creation of incentives and motivations where managers protect the environment rather than relying on regulatory coercion with inadequate resources. This would seem to be doubly important in China where the financing of technological solutions is usually more limited than in the more resource-rich industrialized contexts (Tan, 1999).

Unfortunately, little is known about Chinese managerial proclivities toward environmental protection. While it is broadly assumed that they collectively place much greater emphasis on economic growth over environmental protection (an attribution based on industrial pollution outcomes), this need not be individually true. Indeed, not withstanding poverty and limited environmental information, in a 39-country study, Inglehart (1995) reported that Chinese *citizens* were the most willing to pay higher taxes to protect the environment. Lacking any empirical evidence there may be a huge gap in our understanding of Chinese managers' personal priorities and environmental ethics. Yet, the effectiveness of both regulatory and market-based approaches will ultimately depend in large part on whether managers as a group are favorably predisposed toward the environment or whether a wholesale realignment of their environmental ethical fiber is required. For example, there should be marked difference in the environmental performance of firms that seek ISO 14001 certification to mitigate their impacts over a firm that ''just wants the certificate.''

As Widegren (1998, p. 76) stated: ''... neither legislation against behavior harmful to the environment, nor market incentives for proenvironmental behavior, can completely eliminate the need for moral norms.'' This study seeks to address this gap in our understanding of Chinese managers by comparing the environmental ethics of managers in different types of organizations in Beijing, [1] Dalian [2] and Guangzhou. [3]

2. BACKGROUND—DEFINITIONS/ LITERATURE REVIEW

(a) *Definitions*

The field of ethics embraces the ''rightness or wrongness'' of actions or moral basis for judging them. As Hosmer (1987, p. 3) stated, ethical issues often pose dilemmas for managers in that they ''represent a conflict between an organization's economic performance—measured by revenues, costs, and profits—and its social performance–stated in terms of obligations to persons both within and outside the organization.'' The ''environment'' in this study refers to the natural environment—the totality of living systems outside an organization. Environmental ethics, then, is a systematic account of the moral relations between an organization and its natural environment (Des Jardins, 1997). It should be noted that although Hosmer (1987) tends to frame ethical issues as posing tradeoffs for managers (i.e., to protect the environment or make profits), there is a growing realization that these dual goals are

more compatible than was previously assumed (e.g., Hart, 1997; Schmidheiny, 1992). That is to say that environmental management is in the process of moving from a corporate social responsibility issue to become an operational concern that is consistent with economic performance, especially if all environmental costs are properly accounted for.

(b) *Ethical theory and the environment*

One of the primary goals of environmental ethics is to identify frameworks or guidelines to help managers make morally defensible decisions. While this goal is unquestionably noble, the search for a single or best guideline has proved elusive (e.g., Des Jardins, 1997; Hosmer, 1987). On some environmentally-related ethical dilemmas (e.g., dumping organochlorines from paper bleaching into a mountain stream) these competing frameworks uniformly agree that a particular action is morally reprehensible. Many other situations are, however, and unfortunately, much less clear (Rosenthal & Buchholz, 1998). For example, in order to obtain agreement for a new Disneyland in Hong Kong that (as proposed) will involve a mammoth reclamation project in an environmentally sensitive area, the government of Hong Kong decided to make huge commitments in advance of a proper environmental impact assessment (EIA). Whether such an action is ethical is equivocal and requires selecting the one most appropriate framework to the situation given the decision-maker's own value system. Furthermore, as Hardin (1968) noted in his famous treatise "tragedy of the commons," the morality of an environmental action is often dependent on the state of the natural resource.

It is not our intention here to argue for the merits of any particular framework (the reader is advised to consult Des Jardins, 1997 or Freeman, 1986 for these various arguments). Generally speaking, within the more anthropocentric domain of environmental ethics in a business context there are two broad philosophical schools that make moral claims for protecting the environment—utilitarian and deontological.

(i) *Utilitarian theory*

Utilitarian approaches have their origins in 19th century writers (e.g., Jeremy Bentham and John Stuart Mill) and argue that the morality of an action is best judged by its consequences. Accordingly, the dictum, "the maximum benefit to the maximum number of people" serves as a primary utiliarian benchmark evaluating decisions about the environment. Thus, managers should protect the environment when doing so will bring greater aggregated benefits to the society at large. These benefits can be monetary or less tangible forms of utility (i.e., from relaxation or beauty). This approach, for example, is implicit in most discussions of environmental economics associated with pollution. For example, it would be immoral to burn high sulfur coal in a district heating plant if the benefits to the community are more than offset by combination of private costs *and* social costs. This could easily be the case due to the release of respiratory suspended particulates or "RSPs" (causing health problems to the community), sulfur dioxide (causing acid rain damage), and carbon releases (causing global warming).

(ii) *Deontological theory*

Deontological approaches emphasize acting on principles over consequences. These principles are often grounded in the notion of duties and rights. Such principles express the intentions of our actions and should be rational (Des Jardins, 1997). Among such principles are: that we should only behave in ways that we would accept for all people behaved similarly; that people should be treated as ends and never means; and that we should act in ways that are just and preserve individual freedom. The relevance of these various positions is that the environmental stance—and thus their actions—is likely to be derived from these specific philosophical positions (Spash, 1997).

(a) *Types of economic organizations in China*

In modern China the mix of economic organizational types is much more striking than in the West. Four types predominate in urban areas: state-owned enterprises, collectives, private firms and joint ventures (Gore, 1998; Naughton, 1996; Shirk, 1993; Walder, 1995).

(i) *State-owned enterprises*

First, large state-owned enterprises remain very common in China, especially in those industries associated with defense and the provision public services, or where privatization has proven difficult, usually because their economic viability is dubious and high unemployment is likely. In state-run enterprises all

capital is owned by the state, the general managers tend to be technocrats, and they tend to be instruments of state policy (Freund, 2001; McNally, 2001). Obviously, these enterprises have significant environmental impacts, mostly because they are large and were developed in an era where industrial growth and economic independence had primacy. They also usually lack both the resources and know-how for a major technological overhaul. Indeed, China's 3000 largest firms are reported to be responsible for 60% of the country's industrial discharge (Sims, 1999), most of this number being state-owned (Broadman, 1995; World Bank, 1997a). One notable point is that state run enterprises invariably have a broader social mandate, often providing housing, health care and education for an inclusive "community" of employees (Boist & Liang, 1992). Consequently, state-run organizations must accommodate much broader goal sets and, as a result, should be more open to stakeholder pressures for environmental performance, but at the same time, have rather limited financial and technical options to address these goals.

(ii) *Collectives*

A second form of economic organization in China with its roots firmly in the socialist ideological era is the collective enterprise. In collective enterprises employees technically own the capital and management has a temporary mandate of the employees to act on their behalf (e.g., Nee, 1992; Tan & Li, 1996; Tan, 1999). Practically speaking, however, these organizations are beholden to centrally controlled organs that restrict their autonomy. Among the problems facing collectives are raising capital and reconciling economic realities with both collective ideologies (e.g., job security, equitable compensation and voice in policy-making) and the policies of the state. Thus, managers often have little decision-making freedom and insufficient managerial training. Although managers of collectives will also be exposed to broad stakeholder pressures, we would expect some bias toward local concerns.

(iii) *Private companies*

Since the market reforms, private enterprise has flourished in China (Young, 1995). Such firms may result from the privatization of existing companies or be new ventures that have rapidly grown. The ownership of capital is usually tightly concentrated (i.e., with one person or a small group). Chinese economic organizations often engage in transactions within a strong personal network of contacts (i.e., via "*guanxi*") (Wank, 1996). While private organizations are on the rise in China, it should be noted that the legal and ethical framework for conducting business transactions is still weak. In addition, overall awareness of environmental issues remains low as evidenced by a recent survey which a great majority of respondents reported having only meager knowledge of environmental issues (China Environmental News, June 19, 1999, p. 1). Thus, it is probably fair to say that the general perception of private business is one of preoccupation with profitability and little regard (or even need to have regard for) the environment. This perception goes hand in hand with minimal public expectations for firms to go beyond earning profits, paying taxes, and obeying laws. Indeed, the Business and the Environment newsletter (1999) recently reported the results of an Environic's International "Millenium Poll" that found 44% of Chinese citizens adhered to this position (which was 21st among the 23 countries studied). Thus, it would appear that managers of private firms in China are under relatively little public pressure for environmental responsibility.

(iv) *Joint ventures*

Joint ventures are increasingly common in China. In joint ventures the ownership is shared by at least two different companies with one usually being foreign. Joint venture arrangements vary, but typically membership on the board is shared and the foreign enterprise will have personnel on site who provide technical support, but also serve a controlling function (i.e., to provide first-hand reports of deviations from the agreement). Consequently, joint ventures are somewhat more exposed to external values and pressures (Child, 2000; Shapiro, Behrman, Fischer, & Powell, 1991; Steward, 1997; Walker, Levett, & Flanagan, 1998; Yan, 1999). Typically, these foreign interests will face stricter environmental responsibilities in their home country, although it is questionable how many choose to impose high environmental performance standards as opposed to enjoying greater freedom to pursue profits alone (Luo, 1999; Tan, 1999; Yan, 2000). The interest in environmental performance standards will also depend on the location of the foreign partner. IJVs with Hong Kong partners operating in regional markets, for example, would probably

have less interest in environmental goals than a West European partner selling in global markets.

(b) *Environmental ethics and organizational type*

The discussion of these organizational types has already implied that managerial commitments to the environment should vary by organizational type. It would seem, for example, that managers in joint ventures in China might place greater weight on environmental performance because of external influences and an overall sense of propriety driven by concerns being singled out by authorities. Managers in state-run companies may also place considerable emphasis on environmental protection to the extent that the State has prioritized environmental performance (which it does appear to be doing) even though they may lack resources or authority to take action. To date there has been little empirical research on the basic question of organizational type and environmental performance and none that we could identify in a developing context. Dooley and Fryxell (1999) found that conglomerate (i.e. an organization type) had significantly more toxic releases. But, this study focused more on corporate strategy and used a North American sample. The research question at hand, however, speaks more to the issue of capital ownership and the ethical composition of its managers.

Given the extent to which the Chinese authorities are exploring alternatives to command and control regulation, the ethical orientation of managers in China is an important area of investigation. For example, there is a tendency to blame large state-owned companies—and by implication their managers—for much of China's pollution. While it is undoubtedly true that state-owned companies are serious polluters, it may be an error to make their managers take the rap and erroneous to pin unrealistic hopes on privatization. Indeed, managers of state-owned enterprises face much greater constraints in implementing environmental technologies in heavily polluting industries (i.e., steel, paper, refining, power generation). Jahiel (1994) reported that environmental protection bureaus were more able to regulated state-owned enterprises than private and collectively owned firms. By contrast, in many economies in transition (be they Eastern European or Asian) private business is so strongly associated with competition (and greed) that it is simply assumed they would have little role to play in environmental protection. On the other hand, private businesses are in industries that are less polluting and are more likely to have modern equipment.

The main arguments for linkage between organizational type and the ethical commitments to the environment of managers focus on selection, the inculcation of organizational cultural values, and institutional arrangements. In deducing hypotheses, we have elected to contrast state-run and private firms as likely opposites, being somewhat less confident about the selection pressures in collectives and joint ventures. On the one hand, joint ventures are often highly sought by prospective job candidates as offering the best of both worlds (i.e., pay, some measure of security and professional development); however, joint ventures may place more emphasis on ethical integrity. Similarly, collectives should more strongly embrace social goals (i.e., job security), but their managers may be somewhat less professionally trained.

It seems reasonable to assume that managers are selected into different types of organizations in China based on their ethical makeup and value systems. Thus, for example, one might find managers leaving state-run companies for potentially higher paying jobs in the private sector, perhaps trading off some job security or having to relocate away from family as consequence. On the other side of the selection process, private companies themselves would place some weight on a prospective employee's motivations for pursuing the position.

It also seems likely that managers are influenced by organizational values and incrementally move toward them over time. This could be through a conscious effort on the part of the employer through training programs or simply and incrementally through a socialization process. These arguments—selection and socialization—taken together would argue for differences in the environmental ethical composition of its managers. Related to this are differential institutional influences as clearly residual pre-reform era relations between the environmental bureaus and state-owned enterprises are much stronger than for private firm. Thus, building off the ethical framework presented earlier, it is hypothesized that:

—H1: Managerial commitment to environmental stewardship will differ by organizational type.

—H2: Managerial commitment to environmental protection based on long-term utilitarian reasoning will differ by organizational type.
—H3: Managerial commitment to environmental protection based on short-term utilitarian reasoning will differ by organizational type.

3. METHODOLOGY

(a) *Data collection*

The data for this study were collected from a survey of managers conducted in Beijing, Dalian and Guangzhou in August 1999–September 2000. In the Beijing data collection, a conscious effort was made to obtain relatively equal participation of four types of organizations—state-owned enterprises, private firms, joint ventures and collective enterprises. This requirement was relaxed in the other two locations and managers self-reported the type of organization they were employed in. A limit was also set on having no more than four managers from a single employer. After the elimination of a few unusable questionnaires in each locality, 313 managers completed the survey in Beijing, 161 in Dalian, and 179 in Guangzhou—a total of 653 cases.

The surveys were completed during a scheduled interview session. This method of data collection was necessary given the context of this study, as posting questionnaires would have resulted in an unacceptably low response rate. This is because of general managerial reluctance to provide information and because of Chinese cultural characteristics that rely on relationships and reciprocity. A trained research associate visited each manager at his or her place of business and small gift was provided in Beijing. Consequently, relatively few managers declined such that the response rate was between 60% (Dalian) and 90% (Beijing). Follow up checks were conducted to ensure that each manager was visited, the name of the interviewer, and the length of the interview.

(b) *Measures*

(i) *Environmental ethics*

Lacking a suitable scale from the literature, we devised an instrument that would measure managerial adherence to the three rationales for protecting the natural environment—long-term utilitarian, short-term utilitarian, and a rationale based on universal moral principles we will call "stewardship." The three constructs were measured as follows:

—*Environmental stewardship*: Five items spoke to the respondent's belief that humans have a higher obligation to protect nature. Because adherence to a particular religion is not common in the PRC (atheism being reported by 95% of the respondents in this study), we focused this construct on a person's higher obligation as part of a larger social and environmental system. The Cronbach's α for this scale was .747.

—*Long-term utilitarianism*: Seven items addressed the extent to which the respondent believed that it was important to protect the environment because doing so would improve the material/economic condition for future generations. The Cronbach's α for this scale was .812.

—*Short-term utilitarianism*: Six items spoke to the extent to which the respondent believed that environmental protection was consistent with current or near term economic progress. Stated somewhat differently, this scale assessed the extent to which the respondent saw many environmental efforts as being compatible with profitability. The Cronbach's α for this scale was .756.

The measurement structure of these three scales was further evaluated through confirmatory factor analysis using AMOS 4.0 (Arbuckle & Wothke, 1999). Initially, a model was estimated in which each of the items was permitted to load only on the factor it represented, each factor was allowed to be intercorrelated with the other two, and the relationship were constrained to be equal in each subgroup (i.e., each locality). The fit indices for this model were as follows: $\chi^2 = 929.07/297df$, $p < 0.001$; $\chi^2/df = 3.12$; NFI = 0.976; Tucker–Lewis = 0.979; CFI = 0.983; PNFI = 0.805; RMSEA = 0.057; and the ECVI = 1.762. Overall, these indices appear to support the model. We then tested the null hypothesis of equal measurement structure in each of the three cities by removing the equality constraints on the factor loadings and factor correlations (across the three subgroups). The resulting improvement in model fit was not significant ($\Delta\chi^2 = 37.4/34df$, $p > 0.05$). As a

result, this measurement structure is assumed to be the same for each subgroup.

Overall, these statistics indicate a reasonably good model fit relying on generally acceptable heuristics for model evaluation. These results are reported in Table 1 that also provides the specific wording for each item. It is noted that the factors have rather high intercorrelations (the largest between the long-term utilitarianism and stewardship factors at 0.663). For the subsequent MANOVA analysis, each of these items were summed into indices representing each construct.

(ii) *Organization type*

The type of organization in which the respondent was employed was measured categorically as follows: 1 = State-owned enterprise (i.e., all capital is owned by the government); 2 = Collectively-owned enterprise (i.e., a cooperative in which the capital is owned collectively by its employees); 3 = Privately owned (i.e., all capital owned by private, Chinese investors); and 4 = Joint Ventures (i.e., capital is shared by more than one organizations with one being headquartered outside of the PRC—Hong Kong partners being considered external).

Table 1. *Parameter estimates and model information for confirmatory factor analysis of environmental ethics items*

Item content	Factor 1 Environmental stewardship	Factor 2 L–T utilitarianism	Factor 3 S–T utilitarianism
(1) People should realize that we all have a higher obligation to each other to protect and preserve our natural environment	0.650		
(2) In the larger scheme of things, people have a responsibility to take care of nature and the environment	0.688		
(3) Because humanity if just one component in a greater natural system, we have an obligation to sustain nature and the environment	0.802		
(4) Humanity has a responsibility to protect the natural world as it is not ours alone	0.685		
(5) We need to take care of the environment now so that those who are alive after we have died will be better able to meet their economic needs		0.691	
(6) Even though it may cost us in the short term, preserving the environment today is essential for long-run economic progress		0.669	
(7) Because of the long run economic benefits of preserving the environment, we need to consciously consider our grandchildrens' needs today		0.670	
(9) We need to protect the environment so that, in the long run, the maximum number of people will have the maximum economic benefits		0.595	
(10) In the long run, everyone will be much better off if we conserve our resources today		0.654	
(11) I often feel badly tht we are using natural resources in a way that means future generations will have less		0.588	
(13) If chosen carefully, investments in environmental projects can pay back quickly			0.528
(14) Environmental responsibility can make "good business sense" in the short term			0.672
(15) If top managers commit their companies to improving environmental performance in the right areas, it can improve financial performance			0.680
(16) There are many actions that companies can take now to preserve the environment that, at the same time, can improve its financial performance very quickly			0.736
(17) Short-term profitability and environmental performance need not be negatively correlated			0.552
Factor intecorrelations			
F1—Environmental stewardship	1.000		
F2—Long-term utilitarianism	0.663	1.000	
F3—Short-term utilitarianism	0.463	0.617	1.000

(iii) *Control variables*

We added three variables to represent important individual characteristics that may have a relationship to their ethical predisposition:

—*Gender*: As gender differences appear important in explaining voting behavior (women in many countries being characterized as more liberal), it seemed important to control for gender. This was dummy coded such that female respondents were coded "1" and males "0." One hundred sixty three respondents were women (25%).

—*Education*: The respondents' level of educational attainment is likely to influence their understanding of the causal relationships resulting in environmental degradation (i.e., both long and short term) and it is presumed that education would promote a greater sense of one's responsibilities in a civil society. This variable was scaled as ordered categories (i.e., Doctorate, <1% of the sample; Masters = 5, 14%; Undergraduate, 39%; High Diploma 40%; Secondary = 5%; Primary = <1%);

—*Age*: In a context where ideology has played such a potent role *and* due to relatively recent reforms toward a market economy, it would seem important to control for a persons' age. This was coded as their age in years at the time of the interview. The average age of respondents was 41 and the range was from 22 to 65. Although we did attempt to control for religion, this was eliminated subsequent to the Beijing data collection for lack of variance (95% of the sample professed atheism).

(c) *Analysis*

The structural relationships among the independent variables and these scales were estimated using MANOVA where organization type is specified as a fixed factor explaining each ethical scale with the control variables included as covariates.

4. RESULTS

The descriptive statistics of the variables are reported in Table 2. As is evident in this table there are strong intercorrelations among the three ethics scales (although lower than previously reported in the confirmatory factor analysis), along with a number of significant correlations between the ethics scales and the dummy-coded variables for industry membership. It is also interesting to compare means among the three environmental ethics scales

Table 2. *Descriptive statistics of independent and dependent variables*

Variable	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Respondent's gender (dummy coded)	0.24	0.43	1.00								
(2) Respondent's educational attainment	3.25	0.81	−0.119*	1.00							
(3) Respondent's age (in years)	44	8.20	−0.158*	−0.064	1.00						
(4) Manager in collective enterprise (dummy coded)	0.115	0.32	−0.059	−0.123*	0.003	1.00					
(5) Manager in private firm (dummy coded)	0.192	0.39	−0.003	−0.202*	−0.178*	−0.176*	1.00				
(6) Manager in joint venture (dummy coded)	0.252	0.44	−0.013	0.262*	0.037	−0.209*	−0.283*	1.00			
(7) Environmental stewardship	6.08	0.63	0.026	0.127*	−0.082	−0.139*	−0.048	−0.024	1.00		
(8) Long-term utilitarianism	5.86	0.63	0.003	0.089	0.020	−0.039	−0.153*	−0.055	0.749*	1.00	
(9) Short-term utilitarianism	5.24	0.72	−0.008	−0.004	−0.007	0.020	−0.180*	−0.069	0.478*	0.601*	1.00

* $p < 0.05$.

(which were computed as the average scores for the individual items). As these were measured on a seven-point Likert-type scale, the first thing to notice is that the values are all quite high indicating a strong level of agreement with the items underlying each scale.

It appears that the Chinese managers in this study either truly understand the moral arguments for environmental protection, have demonstrated a strong social desirability bias, or some combination of both. In comparing these values with each other, it appears that the strongest affirmation was given to the environmental stewardship ethic. On the other hand, there is significantly less commitment to the short-term utilitarian ethic (grounded in a belief that economic and environment performance are largely compatible in the short-run).

The MANOVA results are given in Table 3. The general pattern is that, for the most part, the control variables appear relatively inert in influencing these environmental ethics constructs. One exception to this general observation is that educational attainment has a significant effect on the environmental stewardship and the long-term utilitarian ethic. This was further investigated by regressing these two ethics on education to confirm that the sign is *positive* (i.e., more education leads to higher values on these two measures). Although, we might have anticipated that education would influence all three indices, it might be noted that many of the respondents in this study are older (avg. age = 41) such that many had received the bulk of their formal education prior to the era of market liberalization. Any emphasis given to environmental protection in the educational system is fairly recent. Indeed, to the extent environmental issues were covered at all, it was largely through technical subjects in specialized areas of study (e.g., monitoring air quality, waste water treatment, solid waste disposal). Thus, the influence of education on these values probably comes from a more general clarification of values about responsible citizenship behavior. There is little reason to extend this to a belief that companies can potentially be environmentally friendly and profitable in the short term (i.e., where some skepticism may be justified and a position that formal education has not previously addressed).

Significant relationships between organization type and the environmental ethics are found for each construct providing support for each of the three hypotheses, although the significance level is somewhat lower for the short-term utilitarian index. On promulgating each hypothesis, we did not impose a particular pattern of findings among the organizational

Table 3. *MANOVA results*

Source	Dependent variables	Type III SS	*df*	Mean square	*F*	Sig.
Gender	Stewardship	6.42	1	6.42	0.744	0.389
	Long-term utilitarianism	23.13	1	23.13	0.991	0.320
	Short-term utilitarianism	0.17	1	0.172	0.008	0.930
Education	Stewardship	118.04	1	118.04	13.683	0.000
	Long-term utilitarianism	236.44	1	236.44	10.131	0.002
	Short-term utilitarianism	0.32	1	0.316	0.014	0.905
Organization size	Stewardship	20.60	1	20.59	2.387	0.123
	Long-term utilitarianism	57.39	1	57.39	2.459	0.117
	Short-term utilitarianism	3.15	1	3.15	0.142	0.706
Organization type	Stewardship	112.61	1	37.54	4.351	0.005
	Long-term utilitarianism	410.75	1	136.92	5.866	0.001
	Short-term utilitarianism	211.37	1	70.46	3.184	0.023*
Intercept	Stewardship	17917.32	1			
	Long-term utilitarianism	47363.57	1			
	Short-term utilitarianism	23138.66	1			
Error	Stewardship	5133.08	595			
	Long-term utilitarianism	13886.95	595			
	Short-term utilitarianism	13165.11	595			
Total	Stewardship	369579.44	602			
	Long-term utilitarianism	985628.49	602			
	Short-term utilitarianism	564310.89	602			

* $p < 0.05$.

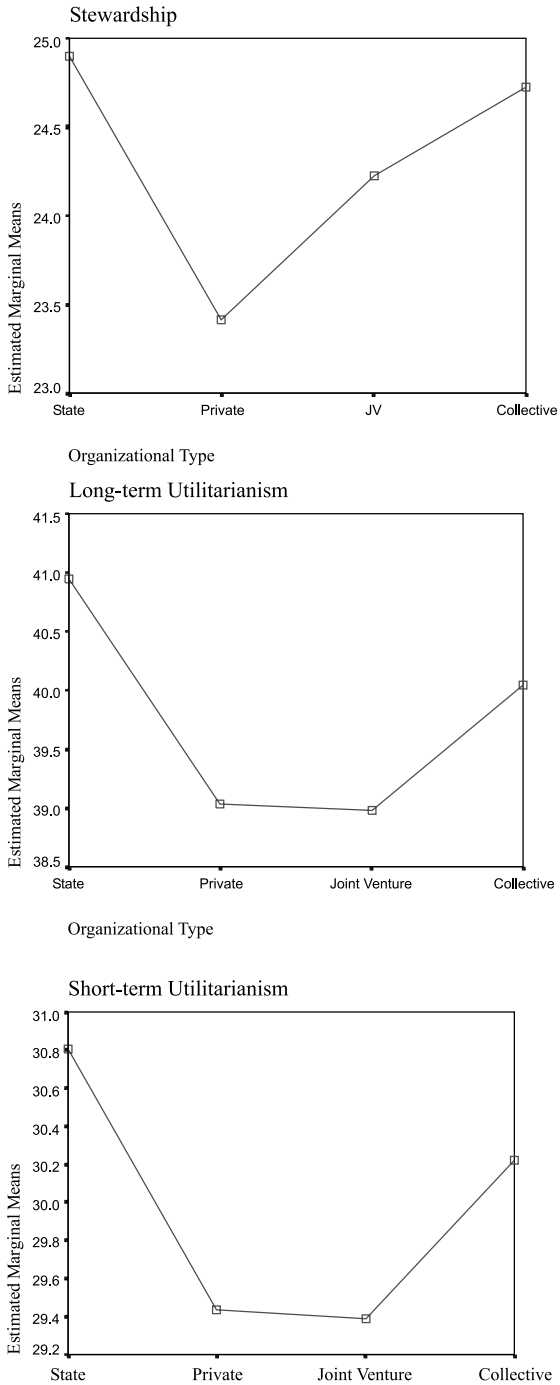

Figure 1. *MANOVA mean plots.*

types, but rather adopted a more exploratory posture.

In order to better understand how these organizational types differ on these ethical scales we obtained the plots that are given in Figure 1. We also conducted performed *post-hoc* examinations using one-way ANOVAs in order to identify significant differences.

From Figure 1 it is evident that the general patterns are similar in each plot. One explanation for this similarity could be related to relatively weak discrimination between two of the measures (i.e., stewardship and long-term utilitarianism). For each of the plots, managers in state-run companies self-reported the highest overall values and they are roughly comparable to the values for managers in collective organizations. Also in each plot the values for private-sector firm and joint ventures self-reported lower values and managers in these two organizations are roughly comparable. *Post-hoc* tests add further support to this pattern. The one possible exception to this pattern is that managers in joint ventures were somewhat higher than their private sector counterparts on the stewardship dimension, but lower than managers in state-run and collectives. The relatively more liberal *post-hoc* criteria (e.g., LSD) indicated that joint ventures are significantly different from the other firm types on this particular dimension. But, the most conservative method (e.g., Scheffe's) did not support this conclusion. Thus, this finding should be considered merely suggestive of such a relationship.

5. DISCUSSION

This study examined the influence of organizational membership on three environmental ethical dimensions using a sample of managers from four different types of Mainland Chinese economic organizations in three different locations. As was argued earlier, understanding these differences is important given the need to address extremely serious environmental problems in China, the important role that managers must play in any successful effort, and the present void of information about their views toward environmental protection.

The main findings of this study are as follows: (a) Chinese managers profess quite strong environmental ethics for all the three ethical dimensions included in this study—stewardship, long-, and short-term utilitarianism; (b) In terms of rank order, this sample of Chinese managers appears to embrace the stewardship most strongly and short-term utilitarianism least strongly; and (c) The strength of these environmental ethics varies for managerial samples in different types of companies. Managers in state-owned and collective enterprises appear to profess stronger environmental ethical values than their counterparts in the private-sector firms and joint ventures. We will discuss each of these issues in turn.

Given that many of the most polluted cities in the world (World Resources Institute, 1998) are located in China, there may be a tendency to assume that Chinese managers, in general, care relatively little about environmental protection. Clearly, however, this study provides strong evidence that this does *not* appear to be the case. In this regard, it is interesting that the strongest value was oriented toward stewardship. As written, these items stress a moral obligation to others and to nature as a larger system. Given that the overwhelming majority of respondents professed no particular religion, the nature of this obligation is clearly more secular than most other cultural contexts. Even being devoid of a central deity, however, Chinese culture retains a strong influence of Confucian ethics that seeks harmony with nature that has been overlaid with Communist ideology. Both of these influences should be roughly consistent with stewardship as operationalized in this study.

Almost as important, however, was a broad commitment to environmental protection due to a belief that damaging it would impair the long-run material betterment of society (and the respondent as a member). Although a belief that economic performance and environmental performance are compatible in the short-term was *not* as strongly held, it would appear that most managers are open to the idea as the mean values are also high for this scale. Altogether, this is more or less in line with earlier research indicating relatively strong environmental commitments in Chinese samples (Inglehart, 1995).

Obviously, such findings do serve to raise a general question about how it is possible that Chinese managers should profess strong values about environmental protection while at the same time China has such serious industrial pollution problems. As this question emerged rather clearly after the initial Beijing data collection, two questions were added to the surveys in Dalian and Guangzhou to provide

some additional information in response. The first question inquired generally about what, if any, environmental programs were being undertaken in the respondents' organizations. The second asked what obstacles there may be to the successful implementation of such programs.

For the first question, 65% of the respondents reported that some type of program was being undertaken. This result is encouraging and is likely the result of the relatively recent prioritization of environmental issues by the Chinese authorities. Moreover, the respondents were asked for up to three such programs and many provided multiple responses. These responses were roughly categorized into the following types in decreasing order of frequency: (i) process improvements (25%); (ii) waste treatment (21%); (iii) recycling (13%); and (iv) planting of trees or shrubs around the facility (11%). Other measures were also mentioned involving changes to organizational procedures and structure, changes to product designs, collaborations with various groups, improved maintenance, noise reduction programs. In general, this appears to show a genuine effort on the part of most organizations to improve their environmental performance although it is not clear how significant or ambitious these programs were.

As for the second question about obstacles to the implementation, responses were received from about 50% of the cases with programs. For cases with programs but no reported obstacles, undoubtedly some respondents may have been reluctant to acknowledge problems, so it is probably unwise to infer that all such programs were being implemented easily. The obstacles (in order to decreasing frequency) mentioned include: (i) resource limitations and the high cost of environmental protection (45%); (ii) low environmental awareness (22%); (iii) doubts about the economic benefits of environmental investments (10%); and (iv) low level of top management commitment (8%). Other obstacles mentioned included a lack of competence, misguided government policies, general lack of standards, and technological hurdles.

Thus, an attempt to understand the disparity between strong environmental values among Chinese managers and the high levels of industrial pollution would most likely emphasize the following themes. First, as environmental impact is a function of population, consumption patterns in that population, and the technologies use to meet those economic demands, it is clear that the sheer size of the population and the density of its industrial establishments is obviously one major reason why the environmental problems are so serious in China. Of course, this relationship also underscores the fact the increasing economic prosperity will increase consumption to further exacerbate the environmental impact. Second, until fairly recently the economy was centrally planned. In this context, industrial growth and defense were prioritized over the environment and the central planners were often far removed from the environmental degradation caused (Lo & Leung, 2000; Lo, Yip, & Cheung, 2000). In contrast to Eastern Europe, the emergence of a market-based economy in recent years has added little toward improvement as there has not been the same wholesale collapse of major polluting industries. Moreover, as is evident in this study, the ethos of capitalism in an emergent private sector may have somewhat less regard for the environment while dealing with an ineffective legal structure and corruption (problems that seem to emerge during such a transition). Consequently, Chinese managers must cope with both the legacy of the past and the realities of the present.

In addition, the respondents pointed to high costs, lack of awareness, and doubts about the economic benefits of investments in environmental protection as obstacles to implementing these programs. Given that the areas surveyed are relatively more prosperous than many other areas in China, we suspect that these constraints are even higher elsewhere in the country—especially in many of the western provinces. Unfortunately, it is many of these localities where pollution is particularly serious due to a heavy concentration of "smoke-stake" industries relying on high sulfur coal and where geography inhibits dispersion (e.g., Langzhou, Chengdu).

We also suspect that there may be a bias toward "high-tech" or capital-intensive solutions and that a creative search for opportunities to reduce emissions could identify many cost effective programs. Given the strong adherence to the environmental ethics professed in this study, we suspect that efforts put into managerial and executive training programs would be fruitful in adding some momentum to such efforts. In addition, such programs as those which provide low-cost or free energy and environmental audits would help show managers the broad overlap between environ-

mental and ethical goals that have been identified. Greater efforts must also be made to have environmental issues and concerns addressed in business school curricula as is beginning to happen in the West. The need for education on environmental issues in China is confirmed in a recent survey of the general population conducted by the State Environment Protection Administration (SEPA) and the Ministry of Education found that a great majority of 11,452 persons interviewed which indicated only meager knowledge of environmental issues (China Environmental News, June 19, 1999, p. 1; SEPA, 1999).

Fortunately, these findings suggest that Mainland Chinese organizations do appear to be beginning to address environmental issues with sincerity and purpose. All this will take time, however, as many of the efforts currently being made are at the relatively early stages of ''sophistication'' in that most appear to be focused on ''end-of-pipe'' approaches (i.e., waste treatment) or some form recycling. Clearly, however, top management interest in more aggressive programs will accelerate as the Chinese authorities demonstrate a willingness to take aggressive action in the form of new legislation and factory closure—already more than 62,000 small firms have been shut down because of anti-pollution violations (China Daily, April 16, 1997, p. 1).

Although this combination of circumstances, prioritization of the environment by central officials (Lo & Leung, 1998; World Bank, 1997b), and the relatively high level of support shown in this study for environmental values may appear to bode better for the future, it is also true that Chinese managers face both personal and infrastructural difficulties in translating environmental convictions into behaviors. That is to say, it is relatively easy to profess ethics for preserving the environment, but acting on these convictions is a very different matter. Thus, significant improvements in environmental impacts from Chinese industry will also require creativity in Government policy as recently highlighted by Sims (1999) which would decentralize decision making and support the market- based economy through the use of economic policy instruments (e.g., full costing, creation of secondary markets for recyclable materials, a.s.o.). This study suggests that such measures will be well received by managers given their moral proclivities toward environmental protection.

Finally, this study found that managers of state-owned companies and collectives in China have relatively stronger environmental ethics than their counterparts in private firms. Thus, these findings should raise some question about relative impact of the growing market-based economy on China's already strained environment. It should also be recognized that as a group the state-run enterprises are in the most heavily polluting industries (e.g., steel, petroleum refining, chemical, paper) with older technology. Thus, the fact that these companies pollute more would appear to have little to do with its managerial pool and much more to do with their technology and industry. Clearly, the state-run companies have broader social objectives than private sector firms and they are more open to the influence of government authorities. This suggests that managers in state-owned companies are likely more attuned to the political priorities of the government. Given this their desire for cleaner operations should grow even more as this has become a political priority.

Several limitations of this study need to be mentioned. First is the issue of generalizability as all of the respondents came from major urban centers (i.e., Beijing, Dalian, and Guangzhou). To some extent such restriction of range was unavoidable given that we ruled out the possibility of using mail surveys in favor of personal contact. Certainly, one should be cautious in generalizing these finding to the whole of China.

Second, in survey research one should be particularly aware of problems associated with mono-method bias. But although the independent variables were self reported (except for organizational type which was coded by the interviewer), they were quite objectively measured. Thus, it seems less likely that gender or age, for example, would be misreported or that relationships to the environmental ethics should be linked via common method.

A final, and potentially more serious, limitation pertains to issues of social desirability bias in self-reports on environmental ethics. We would acknowledge that the responses to questions about the ethics pertaining to environmental protection are possibly upwardly biased. Indeed, we worked quite hard through several iterations in developing this survey to introduce variance and avoid upward skewness in the responses and a number of items were negatively worded to further challenge the respondent. Status differences between the

respondents and the interviewers should have partially mitigated this problem. It is difficult to see why senior managers would go too far out of their way to tell relatively low status interviewers what they presume the interviewer would want to hear. Moreover, any such bias should have operated relatively evenly across the scales so as to not have affected the comparative results.

6. CONCLUSIONS

Given an insufficiency of good empirical research on environmental ethics and an absence of research from a managerial sample from Mainland China, this study was intended to fill a rather large gap in the literature. Given the importance of China to a broad range of global environmental issues it is extremely important that we begin to understand Chinese managers and their environmental performance. This study addressed two primary research questions: How environmentally ethical are Chinese managers? Is organizational type related to the level of environmental ethics of managers?

In summary, this study found that Chinese managers profess having strong environmental ethics. Thus, some speculation was provided about why there should be such a strong profession of commitment to the environment in the presence of serious problems with industrial pollution. In comparing organizational types, it was found that Chinese managers in state-owned firms and collectives appeared to embrace somewhat stronger environmental ethical values over their private sector and joint venture counterparts.

NOTES

1. Beijing is the capital city of China locating in the northern province of Hebei. Its population is over 10 million. The city has encountered severe air and water pollution in the reform era. As the national leaders, including Premier Zhu Rongji, expressed their deep concern over the deteriorating environmental conditions in the city, the Beijing municipal government has recently taken strict measures to control vehicular emission and water pollution.

2. Dalian is a city located in the southeast end of Liaodong Peninsula in Northeastern part of China. Its popular is over five million. Dalian is traditionally an industrial city that suffered from severe industrial pollution until Po Xilai became the mayor of the city in 1992. With a green vision in the adoption of tough measures, the environmental conditions of the city have much improved. It is now one of the model city in China in environmental terms.

3. Guangzhou is the largest city in the Pearl River Delta in Southern China. Its population is over six million. Guangzhou has achieved rapid economic growth since the beginning of the reform era in 1979. Consequently its environment has been under tremendous stress. As a result its people have increasingly demanded a better living environment. The current mayor has reversed some of the excess of the pro-growth orientation adopted by the former mayor in the city's development in the last few years.

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