Global Environmental Change 37 (2016) 116–127

Contents lists available at ScienceDirect

Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha

Public environmental concern in China: Determinants and variations

Xinsheng Liu[a,1], Ren Mu[b,*]

[a] Institute for Science, Technology and Public Policy, the Bush School of Government and Public Service, Texas A&M University, United States
[b] Department of International Affairs, the Bush School of Government and Public Service, Texas A&M University, United States

ARTICLE INFO

Article history:
Received 15 September 2015
Received in revised form 25 January 2016
Accepted 26 January 2016
Available online 23 February 2016

Keywords:
Environmental concern
Economic development
Environmental risk
China

ABSTRACT

How much are Chinese people and various citizen groups concerned about the environment relative to other major public problems? What are the key factors and to what extent do these factors shape individual Chinese environmental concern? Based on a micro-macro model and a county fixed model proposed in this study, we employ nationwide representative public opinion survey data and provincial statistics to examine the determinants and variations of public environmental concern in China. The data shows that environmental concern is not among the top-ranked issue concerns in China overall, but in the urban areas and in the east-coastal region environmental protection features as a rather important issue. Our regression analyses further demonstrate that the Chinese environmental concern is significantly affected by both micro-level socio-demographic variables and macro-level regional economic conditions and environmental risks. In the east-coastal region, such individuals as urbanites with high income are most environmentally concerned. There is a lack of concern over environmental issues among the public in the west region, where little association between individual sociodemographics and their environmental concern is detected. In the central-northeast region, education effect is evident in the rural area. Location contextual factors such as economic development and environmental risk account for most of the observed variations in public environment concern.

1. Introduction

Balancing economic growth and environmental protection is a major challenge for many countries around the world, and nowhere is the challenge more significant and pressing than in China. With a remarkable annual growth rate in GDP averaging at 8 to 9 percent for the past three decades, China has transformed from a poverty-afflicted country into a global economic powerhouse. However, this spectacular economic growth comes at a very heavy price: the environmental conditions in the world's most populous country have been quickly deteriorating over the last two to three decades (SEPA, 2004; Economy, 2004; Liu and Diamond, 2005; World Bank, 2007). Even though China has recently achieved significant decreases in pollution per unit of output, the improvement is largely offset by its rapid industrial expansion (Roumasset et al., 2008).

The environmental degradation is progressively taking a more devastating toll on the Chinese people. A World Bank report (World Bank, 2007: xvii) estimates that the total cost of air and water pollution in China in 2003 was 362–781 billion yuan (or 2.68–5.78% of GDP). Across China, only 1% of urban dwellers breathe air that is considered safe by the European Union (The New York Times 2007). Sulfur dioxide and suspended particulate matter in polluted air have been linked to lung damage and other respiratory disease For instance, Lave and Seskin (1970) and Dockery et al. (1993) find that variation in sulfur dioxide and population density together explain two-thirds of the variation in death from bronchitis in a sample of US cities. In China, a policy designed to offer winter heating via the provision of free coal for fuel boilers has led to higher air pollution concentrations and reduced life expectancies by approximately 5.5 years in northern China (Douglas et al., 2009; Chen et al., 2013). While 115 million rural inhabitants still rely on surface water as their main source of drinking water, the pollution levels in China's water bodies are believed to be the highest in the world, with roughly 70% of China's surface water unfit for human use (World Bank, 2007). The dumping of untreated wastewater in densely populated areas has significantly contributed to China's increasing cancer rate (Ebenstein, 2012).

For many measures of environmental quality, evidence shows that economic growth brings an initial phase of deterioration followed by a subsequent phase of improvement. While the turning points for different pollutants vary and the estimates of them are sensitive to model specifications (Grossman and Krueger,

* Corresponding author. Fax: +1 979 845 4155.
E-mail addresses: x.liu@tamu.edu (X. Liu), rmu@tamu.edu (R. Mu).
[1] Fax: +1 979 862 8856.

http://dx.doi.org/10.1016/j.gloenvcha.2016.01.008
0959-3780/

1995), there is no reason to expect that the improvement will happen automatically even if a country has reached the turning points where growth can be associated with improved environmental conditions. Without strong citizens' concern and effective policy response to address environmental protection, it is likely that the environmental conditions will continue to deteriorate while the economy keeps growing (York et al., 2003). Citizens' demand for more policy attention and response to the noneconomic aspects of their living conditions is the crucial link between growth and pollution control (OECD, 1991). For this reason, public concern for pollution and environmental degradation has played a vital role in the formulation and implementation of environmentally proactive policy measures in various regions or countries such as Taiwan (Tang and Tang, 1999), the United States (Bosso, 2005), Thailand (Forsyth, 2007), and India (Greenstone and Hanna, 2014).

In China, there is also evidence showing the increasing role of public environmental concern in addressing environmental issues. For instance, one of China's pollution control measures is the use of financial fines, essentially an economic instrument, to penalize noncompliance. Consequently, emission decisions for the firms are no different from decisions of other inputs, which all depend on cost-benefit analysis (Wang and Wheeler, 2005). In this system, the channel through which public concern about environmental issues can strengthen the enforcement of pollution control is to make public the environmental impacts of pollution through public protests. Such demonstrations of public environmental concern can effectively increase the observable social impacts of a firm's pollution, reduce its bargaining power with local environmental authorities, and allow regulators to increase the penalties for pollution (Wang and Wheeler, 2005; Wang et al., 2003). As increased levy rates can induce firms to modify their behaviors (Ebenstein, 2012), public demonstration of environmental concern can effectively lead to a reduced level of pollution. Moreover, a recent study shows that as the state and the public opinion continue to nudge local governments to pursue greenness, establishing and meeting energy and environmental targets have begun to be considered as promotion criteria for city mayors (Zheng et al., 2013). At the same time, the rising public demand for "green cities" is reflected by the housing market, where more polluted cities feature lower real estate prices (Zheng et al., 2011).

The importance of public environmental concern in promoting sound public policies and environmentally friendly behaviors are widely recognized by scholars (Hackett, 1993; Mintion and Rose, 1997; Lotspeich and Chen, 1997). Over the last several decades, numerous studies have examined citizens' environmental concern, but most of them have focused on industrialized countries (e.g., McStay and Dunlap, 1983; Blocker and Eckberg, 1997; Dunlap, 1991; Dunlap and Scarce, 1991; Jones and Dunlap, 1992; Kanagy et al., 1994; Kempton et al., 1995; Abramson and Inglehart, 1995; Bord and O'Connor, 1997; Liu et al., 2014). While a few recent studies have investigated some aspects of citizens' environmental concern in China (e.g., Luo, 1998; Ma and Guo, 2000; Jin and Jian, 2001; Wei et al., 2002; Li, 2003; Lai and Tao, 2003; Stalley and Yang, 2006; Shen and Saijo, 2008; Cao et al., 2009), there are some gaps or limitations in these studies. These limitations are mainly reflected in their non-representative sampling designs (and thereby non-generalizable findings), lack of comparisons of variations across citizen groups (e.g., rural vs. urban citizens), and relatively narrow explanations of the sources of Chinese environmental concern.

In this study, we attempt to address some of these limitations. To do so, we develop a micro-macro framework to explain citizens' environmental concern. Empirically we employ the data from a nationwide individual representative survey—i.e., the China Survey, together with regional statistics collected from China's statistical yearbooks, to investigate the influences of both individual and regional variables on environmental concern. Our objectives are threefold: (1) assessing the overall level of Chinese citizens' concern for environmental protection relative to other competing social and public issues; (2) documenting variations in the public's environmental concern between the rural and urban areas and across different geo-economic regions; and (3) uncovering the underlying individual micro-level factors and contextual macro-level forces that drive Chinese citizens' environmental concern.

Our research makes several contributions to the environmental study literature in general and to the study of Chinese environmental concern in particular. First, our research, to our best knowledge, is the first one that utilizes large scale, nationwide representative survey data to study Chinese public environmental concern. The representative nature of the China Survey allows us for the first time to provide empirical evidence that is perhaps more generalizable in China. Second, the design of the questions on multiple issue concerns facing Chinese citizens in the China Survey makes it possible to gauge Chinese environmental concern in the context of other competing issue concerns. At any given time in a society, citizens and policy makers are confronted with many public issues, and these issues always compete for attention and concern. Due to limited attention span and processing capability, issues with lower concern level tend to have lower agenda status and thereby less likely to seriously be considered and handled in policy making process (Cobb and Elder, 1983; Baumgartner and Jones, 1993; Jones, 1994a, 1994b; Kingdon, 1995; Jones and Baumgartner, 2005). To compare environment concern with other key issue concerns, we are able to pinpoint where exactly environmental protection is placed in a spectrum of social issues. Third, with the large-N, the China Survey dataset allows us to compare the levels of environmental concern among various citizen groups and conduct statistical analyses and robustness checks with different model specifications. Fourth, we go beyond the traditional approach that typically focuses on individual level characteristics (e.g., gender, age, education) to explain citizens' environmental concern. We contend that broad contextual conditions such as regional economy and environmental risk also affect citizens' environmental concern and incorporate provincial GDP and pollution variables into our theoretical modeling and empirical analysis.

In what follows, we first review past literature to identify major sociodemographic sources of public environmental concern. We then discuss several important regional factors that may influence citizens' environmental concern. In constructing our framework, we contend that a more comprehensive explanation to Chinese environmental concern must include both micro individual characteristics and macro contextual variables. Next, we introduce our data sources, describe our analytical strategies, and present descriptive statistics and regression analyses. Major findings and key implications are discussed in the conclusion.

2. Micro-level factors: sociodemographic bases of environmental concern

Past research on public environmental concern is mainly focused on the identification of what types of individuals tend to be most concerned about environmental problems by examining standard sociodemographic variables such as gender, age, education, income, race/ethnic group, and residence place/location (for a review, see Liu et al., 2014). Sociodemographic variables are generally found to be associated with the citizen's environmental concern, yet the direction and significance of some of these correlations vary across studies.