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A multilevel analysis of the determinants of willingness to pay to prevent environmental pollution across countries

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ABSTRACT

This paper discusses the extent to which individual and contextual level factors influence the likelihood of individuals' willingness to pay (WTP) to prevent environmental pollution. A multilevel probit regression framework was set up to explain WTP to prevent environmental pollution. We use data from the World Values Survey (WVS), which contains socio-economic and socio-demographic information, and merged it with country level covariates. Compared to many previous studies, our dataset encompasses a more indepth set of individual level covariates. We find that rich people, individuals with higher education, as well as those who possess post-materialist values are more likely to be concerned about environmental pollution. This study reveals that in developed countries, 90% of country variation in WTP to prevent environmental pollution can be explained by individual characteristics. This portion reduces to 80% in the case of developing countries. An interesting feature in our study is the ability to investigate the effect of contextual factors on individuals' willingness to contribute for the environment. We observe that both democracy and government stability reduce individuals' intention to donate to prevent environmental damage mainly in developed countries.

1. Introduction

Over the past decades, particularly after the 1970s, the world has witnessed a burgeoning of ecological resistance and a rise in environmental concerns.[1] The surge in environmental consciousness has prompted increasing research to investigate in detail what shapes individuals' environmental awareness. Concerns about environmental problems were initially considered as a manifestation of affluence and belief to be linked to post-materialistic values (Inglehart, 1990, 1995). Recently, studies have shown that the rapidly increasing environmentalism has become a global phenomenon which spread through both developed and developing countries (Brechin & Kempton, 1994; Dunlap & Mertig, 1997; Brechin, 1999; Gelissen, 2007; Dunlap & York, 2008). It is worth mentioning that since the appearance of the modern environmental movement in the early 1970s, hundreds of thousands of people around the world have joined grassroots groups to protest exposure to environmental pollution (Tesh, 1993). The fast-growing and unprecedented expansion of environmental organisations in the years following the 1970s indicates that the movement is not only alive but that it may be stronger than ever (Dunlap & Mertig, 1991). Nowadays, environmental

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[1] Dunlap and Jones (2002) define environmental concern as the degree to which people are aware of problems regarding the environment and support efforts to solve them and/or willingness to contribute personally to their solution.

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movements exist at the local, national, and international level. Greenpeace has millions of paying supporters around the globe. Earth Day Network has more than 50,000 partners in 196 countries reaching out to hundreds of millions of people. Furthermore, results from the fifth wave of the World Values Survey (WVS) indicate that about 65 per cent of the World population are willing to protect the environment through financial contribution. This uprise in movements have ignited serious research and heated environmental policy debate during the past few decades.

A large body of literature has explored the reasons motivating individuals to engage in environmental protection. An influential strand of this literature postulates that on top of post-materialistic values, environmental concern is also driven by the increased incidence of climate-related disasters, coupled with almost conclusive scientific evidence as well as mass-media coverage of both disasters and scientific near-consensus (Doulton & Brown, 2009; Sampei & Aoyagi-Usui, 2009). Undeniably, these climate-related disasters have had a great incidence on individuals' environmental consciousness and have consolidated public views on the need to protect the environment. A number of previous studies have found socio-economic status as determinant of environmental concern (Sulemana, 2016; Sulemana, James et al., 2016; Sulemana, McCann et al., 2016; Marquart-Pyatt, 2012). For instance, Sulemana (2016) studies the relationship between happiness and WTP to protect the environment in 18 countries. He concludes that happier individuals are more willing to make income sacrifices to protect the environment. In the same vein, Sulemana, James, and Valdivia (2016) explore whether people's perceptions about their socioeconomic status are correlated with their environmental concern. They find that relative to people who believe they are in the lower class, those in the working class, lower middle class, upper middle class, and upper class tend to show significantly more environmental concern in both African and developed countries. In a comparative study across 19 advanced industrial and former communist nations, Marquart-Pyatt (2012) reveals some factors (education and income) that are consistently related to pro-environmental attitudes and behaviors.

On the other hand, Franzen and Meyer (2010) argue that wealthier countries are more concerned about environmental issues than poorer countries. As pointed out by Inglehart (1995) regardless of being in a rich or a poor country, individuals who perceive their immediate environment deteriorating as a consequence of environmental pollution are more likely to take positive actions leading toward an environmental improvement. Sulemana, McCann et al. (2016) find evidence corroborating Inglehart's (1995) "objective problems and subjective values" in the case of African countries. However, given that environmental protection may be accompanied by real costs, individuals' actions alone would not suffice to combat environmental pollution. As such, a scaled up effort to preserve the environment may be seen as a viable avenue to adequately address environmental issues. Therefore, it is important to investigate the potential effects of contextual factors on individuals' willingness to combat environmental pollution. Although, research on environmental concern is an area of growing interest, the majority of studies exploring environmental concern have either ignored individual level or contextual level factors (Dunlap, Gallup, & Gallup, 1993; Dunlap & Mertig, 1997; Inglehart, 1995, 1997; Kidd & Lee, 1997; Diekmann & Franzen, 1999; Franzen, 2003; Knight & Messer, 2012). Little has been done to test a model that integrates both individuals and contextual level variables. We are only aware of a few studies which have investigated the determinants of individuals and contextual factors (Gelissen, 2007; Franzen & Meyer, 2010; Fairbrother, 2012; Running, 2013; Dorsch, 2014). They too have been limited in scope because they focus predominantly on the factors influencing environmental concern in highly industrialized countries.

The purpose of this paper is to provide a more cohesive analysis, by applying multilevel modeling to unpack the factors behind individuals' WTP to prevent environmental pollution in developing and developed countries. We use socio-demographic, social structural, psychological, as well as contextual covariates to establish whether there are similarities or differences in WTP to prevent environmental pollution across countries. Results of multilevel logistic regressions indicate that a substantial proportion of country variation in WTP to prevent environmental pollution can be explained by individual characteristics. That is, education, income, post-materialist values, religion and membership of environmental organization are found to be consistent determinants in explaining WTP to prevent environmental pollution. Besides these strong and statistically significant individual level predicators, we find evidence that, mainly in developing countries, democracy and government stability are negatively correlated with individuals' intention to take action to mitigate environmental problems. Various reasons can be offered for the negative effects of democracy and government stability on individuals' financial contribution in developed countries. For instance, in developed countries, effective policies such as absolute limits on emissions, government funding of alternative-energy systems, and coordinated efforts to protect biodiversity are likely to lower individuals' participation to combat environmental problems. It can also be argued that in countries where democracy and government stability are prevalent, people pay their fair share of taxes and expect their government to do its part in addressing environmental challenges. Thus, this study represents not only the first research on efforts to elucide the role of the quality of institutions on individuals' participation to combat environmental problems, but is also one of the few empirical analyses to apply statistical tools to disentangle the effect of individuals and contextual level factors on WTP to prevent environmental pollution. Our findings echo that the longstanding developed–developing differential in the WTP to prevent environmental pollution can be explained by both individuals and contextual level covariates.

The paper proceeds as follows. The next section reviews relevant literature about individuals' and cross-national environmental concerns. We then present the multilevel logistic modeling approach. In Section 4, we describe the data. Section 5 discusses the empirical results. The last section concludes the paper.

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