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# PARTICIPATION IN ENVIRONMENTAL ORGANIZATIONS:

## AN EMPIRICAL ANALYSIS [*]

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**Abstract:**

The literature on volunteering has strongly increased over the last few years. However, there is still a lack of substantial empirical evidence on the determinants of environmental participation. This empirical study analyses a cross-section of individuals using micro-data from the World Values Survey wave III (1995-1997), which covers 38 countries, to investigate this question. The results suggest that individuals' active participation in environmental organizations is influenced not only by socio-demographic and socio-economic factors, but also by political attitudes. Furthermore, we observe regional differences. Interestingly, environmental participation seems to be a more important channel for action in developing countries, where weak and dysfunctional states make people pursue their goals through non-governmental sector activities. We also find that a higher level of perceived corruption promotes participation in environmental organizations, which shows that individuals take action when they feel that the government is corrupt.

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# INTRODUCTION

Social capital has been studied in depth by many different disciplines. It has advanced to an

important concept in social sciences, enforcing the interdisciplinary social discourse among

researchers. Woolcock (1998) stresses that social capital provides a "credible point of entry for sociopolitical issues into comprehensive multi- and interdisciplinary approach to some of the most pressing issues of our time. In social capital, historians, political scientists, anthropologists, economists, sociologists, and policy makers – and the various camps *within* each field – may once again begin to find a common language within to engage one another in open, constructive debate, a language that disciplinary provincialism have largely suppressed over the last one-hundred-and-fifty years" (p. 188).

The rapid growth of the social capital literature underlines a widespread unease with the standard explanations for the different political and economic performances not only across nations but also across sub-national jurisdictions (Ostrom and Ahn, 2003). Many studies in the last ten years tried to find out to which extent social capital can be seen as an important, albeit in previous studies omitted factor.

The political scientists Almond and Verba (1963) have been among the first who intensively investigated the concept of social capital. Many years later, the interest in the social basis of political and economic life has reemerged thanks to researchers such as Putnam (1993) and Fukuyama (1995). Social capital advanced to an important research agenda in political sciences. Putnam (1993) claims the importance of social capital for the effective governance of democracy. He defines social capital as "features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions" (p. 167). Many authors have singled out social capital as an important feature of productive social relationships (Gambetta, 1988; Hardin 1993).

Also sociologists have intensively investigated the concept of social capital. Key figures at the beginning were Bourdieu (1979) and Coleman (1988, 1990). They both have strongly influenced the social capital literature focusing on individuals and small societal units. Portes and Mooney (2002) point out that the most widely accepted definition of the

term social capital in sociology is "the ability to secure resources by virtue of membership in social networks or larger social structures" (p. 305). Social capital has also attracted the attention of non-academic institutions such as the World Bank, which developed a Social Capital Initiative focusing mainly on developing countries and investigating the practical relevance of this concept.[1]

Grootaert (2001, pp. 10-11) stresses that there are three major views on social capital: Firstly, the concept developed by Putnam (1993) interpreting social capital as a social network, as networks of civic engagement facilitating coordination and cooperation. Secondly, Coleman's (1988, p. 598) approach defines social capital as "a variety of different entities", consisting of some aspects of social structure and facilitating certain actions. This allows to take into account not only horizontal but also vertical social relationships. The third concept considers the social and political environment that enforces norms and shapes social structures. According to Paldam (2000, p. 630), there are three families of social capital concepts: trust, cooperation and network. He points out that "most people build *trust* in and *networks* to others and come to *cooperate* with them" (p. 629).

In terms of environmental topics, the so-called institutional ecological economics, a scientific area which consists in a mixture of institutional economics and ecological economics, shows that social capital influences transaction costs and the effectiveness of public environmental policies. So, "environmental conflicts can be resolved by making collective choices that are implemented by establishing changing or reaffirming governance institutions" (Paavola and Adger, 2005, p. 364). It has furthermore been shown that social capital is important for dealing with new environmental scenarios, such as the climate change, or for coping with the impact of environmental disasters, such as droughts or floods. The capability of societies to adapt is strongly linked to their capability to act collectively (Adger, 2003).

In this paper we focus on the network component. Civil engagement in voluntary organizations is gaining increased attention from researchers; nonetheless the causes of environmental participation are still fairly unknown. Voluntary activities have the advantage to create social output that would per se require paid resources (Freeman, 1997). Pretty and Ward (2001) showed that the creation of active pro-environmental groups was really significant for solving certain local environmental problems[2]. Our study will show who is liable to participate and will help to see whose priorities and values are best promoted by voluntary work in environmental organizations. Moreover, one key intention of the paper is to provide evidence of the extent to which political attitudes affect the participation in environmental organizations. Three different proxies are used to measure individuals' interest in politics. This allows to check the robustness of the results. The impact of variables such as political attitudes has largely been neglected in previous studies. We furthermore investigate regional differences. As we will see, the results show big regional differences and suggest that it would be useful to analyse the relevance of a state's capacities, in order to understand citizens' involvement in environmental organizations. We observe the tendency that a dysfunctional state induces people to pursue their goals through alternative channels, engaging in non-governmental sector activities. We also find that a higher level of perceived corruption enhances participation in environmental organizations, which shows that individuals take action when they feel their government is corrupt.

During decades, social scientists have searched for factors which make individuals develop a pro-environmental behavior. An interdisciplinary perspective may be helpful. (see, e.g., Messick and Brewer, 1983; Guagnano et al., 1995; Clark et al., 2003). However, only a few studies analyzed the factors which have an impact on the participation in environmental organizations (Mohai, 1992; Thompson and Barton, 1994). Thus, our empirical study analyses a cross-section of individuals using the World Values Survey wave III (1995-1997) to see to which extent citizens are actively participating in environmental organizations. One of the

major advantages of the data set is that different cultural regions can be compared, i.e. the cross-culture robustness of our investigated variables can be assessed. Furthermore, we are not working with the newest available survey, as some of the variables such as individuals' perception of corruption have not been collected in the latest wave.

Section II of the paper introduces the topic and describes some factors which matter in pro-environmental behavior, as they emerge from the results of previous studies. Section III then presents the empirical model we propose, and Section IV introduces the data set, the variables and the main hypotheses. Finally, the empirical findings are presented in Section V and Section VI finishes with some concluding remarks.

## PRO-ENVIRONMENTAL BEHAVIOR AND ITS DETERMINANTS

Focusing on direct participation in environmental organizations has the advantage that individuals' behavior can be compared to studies that have empirically investigated environmental attitudes. Moreover, it allows to build the bridge between the social capital literature that focuses on volunteering and the environmental literature on pro-environmental preferences. What is the meaning of 'pro-environmental behavior'? Kollmuss and Agyeman (2002) define it as an individual's actions that consciously seek to minimize the negative impact of human activities on the environment. Jensen (2002) refers to those personal actions that are directly related to environmental improvements. Some daily activities, such as minimizing resource and energy consumption, reducing and recycling waste, or using public transport are private actions which contribute to the improvement of the preservation of nature. In the same way, participation in environmental organizations can be seen as a kind of pro-environmental behavior and is highly relevant to make effective those environmental policies which require behavioral changes. According to Clark et al. (2003), from an economic perspective, this kind of behavior "exemplifies an individual's voluntary effort to

provide an environmental public good" (p. 238). Why do people take actions which result in collective benefits? While the traditional outlook rather finds a free-rider effect in the private provision of public goods (Olson, 1965), in practice the observed levels of provision are higher than the theoretical predictions (Andreoni, 1988; Piliavin and Charng, 1990).

In previous studies some pro-environmental actions have been analyzed in a multi-country context, either using a global viewpoint (Schultz and Zelezny, 1998) or considering a more concrete behavior, such as waste recycling (Guagnano et al., 1995; Guerin et al., 2001), collaboration on green programs (Clark et al., 2003), or the choice of recreational activities (Jackson, 1987; Ajzen and Driver, 1992; Luzar et al., 1995). Only a few studies analyzed the participation in environmental organizations (Mohai, 1992; Thompson and Barton, 1994). As empirical studies are rare, we provide an overview of studies which have analyzed specific or generic[3] pro-environmental behaviors or attitudes or which have discussed factors making people participate actively in voluntary organizations (Bekkers, 2005).

We first look at socio-demographic characteristics. Previous studies have shown the importance of these factors when investigating the preferences for environment protection (Whitehead, 1991; Cameron and Englin, 1997; Blomquist and Whitehead, 1998; Engel and Pötschke, 1998; Witzke and Urfei, 2001; Dupont, 2004; Israel and Levinson, 2004; Hidano et al., 2005; Torgler and Garcia-Valiñas, 2005).

Howell and Laska (1992) found that younger people are more concerned about environmental problems than older ones. Nord et al. (1998) show a strong relation between age and environmental concern. Some other studies have found that individuals over the age of 50 are more likely to volunteer than younger people, because they have more free time (Wymer, 1998). Moreover, Cappellari and Turati (2004) found a positive and significant correlation between the age and the probability of working in several voluntary organizations.

Experimental and empirical studies have shown gender differences in topics such as charitable giving or tax morale, which are closely related to social capital and bargaining or

household decision making (Brown-Kruse and Hummels, 1993; Nowell and Tinkler, 1994; Andreoni and Vesterlund, 2001; Torgler, 2006). It is often argued that traditional gender socialization, cultural norms, the women's roles as caregivers and nurturers, encouragements to be cooperative and to feel compassion lead to a higher concern for the maintenance of life and environment. The "traditional" domain of working at home induces a greater likelihood to engage privately in behaviors aiming at the preservation of the environment[4]. Thus, women have a tendency to be more concerned with the environment than men. Zelezny et al. (2000) find strong evidence that environmentalism does not begin in adulthood, which contradicts the statement that gender differences arise due to motherhood and child protection. Women show at every age more concern for the environment than men. Finally, the literature has found that women volunteer more than men (Bekkers, 2005), although political volunteers are more likely to be male (Bussell and Forbes, 2003).

However, literature reviews in the 80s report that the relationship between environmental attitudes or preferences and gender is meager and inconsistent (Van Liere and Dunlap, 1980; Hines et al., 1986-1987; Mohai 1992). The meta-review of Zelezny et al. (2000) covering the years 1988 and 1998 reports that out of 13 studies, 9 found that women are significantly more active in pro-environmental behaviors than men, 3 found no statistically significant difference between males and females and one study reports a greater participation of men. Davidson and Freudenburg (1996), Bord and O'Connor (1997) or Hunter et al. (2004) found higher values for women, while Kealy et al. (1990), Swallow et al. (1994) and Cameron and Englin (1997) found the opposite result. Finally, Brown and Taylor (2000) did not find any gender difference. Additionally, several papers found a positive correlation between education and participation in voluntary organizations (Wilson and Musick, 1999; Freeman, 1997; Bekker, 2005). Individuals with a higher education may be more aware of the social needs. Furthermore, they may get better jobs when they enter the voluntary sector (Wilson and Musick, 1999). Having detailed knowledge about current and future environmental

problems and the impact they might have is an important issue too. In this sense, well-informed citizens have a higher probability to be involved in pro-environmental actions. Usually, a positive relationship is found between pro-environmental behavior and the educational level (Van-Liere and Dunlap, 1980; Nord et al., 1998; Guerin et al., 2001).

Moreover, several previous studies have stressed the relevance of information or informal education (Whitehead, 1991; Blomquist and Whitehead, 1998; Hidano et al., 2005). In a meta-analysis, Hines et al. (1986-87) found a positive correlation between knowledge and responsible and pro-environmental behaviors. The deeper the knowledge, the higher the probability that an individual is involved in actions that protect the environment (Kollumuss and Agyeman, 2002). Well-informed citizens who know about environmental problems might have stronger pro-environmental attitudes, because they are better aware of the possible damage (Danielson et al., 1995). Thus, not only formal education should have an impact on whether an individual participates in an environmental organization. Some studies on participation in voluntary associations or environmental concerns have shown the importance of political and psychological characteristics and attitudes and have labeled them "internal or intrinsic factors" (Kollmuss and Agyeman, 2002; Cappellari and Turati, 2004). Bekkers (2005), for example, found that people more interested in politics participate more actively in voluntary associations. Extraversion, solidarity and/or empathic concern for other people are other factors that matter (Cappellari and Turati, 2004; Bekkers, 2005).

Marital status is a further control variable. Married people are more concerned about environmental degradation than others, especially compared to singles, because they are more constrained by their social network and often strongly involved in the community (Tittle, 1980). They furthermore might be more concerned with environmental problems than singles as the "parent effect" makes them seek their children's future welfare (Dupont, 2004).

The economic situation of an individual is a significant aspect too. A negative effect on volunteering has been found for people who highly value economic issues[5]. But although

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some economic models of volunteering assume that people with a high value of time face higher opportunity costs and should be less likely to volunteer (Freeman, 1997), some previous studies have shown that a more privileged social status is often correlated with higher levels of voluntarism and civic participation (for an overview see Hwang, Grabb and Curtis, 2005). It has been found that high and middle-income people are more involved in pro-environmental actions (Guerin et al., 2001; Clark et al. 2003). It can be argued that the environment is not only a public good, but also a normal good. Thus, demand may increase with income (Franzen, 2003). Regarding volunteering, Smith (1999) found differences in the employment status among young volunteers. Veisten et al. (2004) showed that unemployed people present, occasionally, lower preferences for environmental protection policies. However, the latter relationship sometimes is neither clear nor significant at all (Engel and Pötschke, 1998; Witzke and Urfei, 2001).

## THE MODEL

The question on environmental participation that is of primary interest in this paper is phrased as follows:

*Now I am going to read off a list of voluntary organizations; for each one, could you tell me whether you are an active member, an inactive member or not a member of that type of organization? Environmental organization*

Our dependent or response variable has the value 1 if an individual is an active member of an environmental organization, otherwise 0[6]. Thus, we are going to use a probit

model for the analysis of binary outcomes. In binary response models, the interest lies in the response probability (see Wooldridge 2002):

$$p(x) \equiv P\ (y = 1 \mid x) = P\ (y = 1 \mid x_1, x_2, \ldots, x_k) \tag{1}$$

for values of $x$ that contain individual characteristics such as age, gender, education, marital and employment status, economic situation and political interest. For a continuous variable $x_j$, such as for example education, the partial effect of $x_j$ on the response probability is:

$$\frac{\partial P(y = 1 \mid x)}{\partial x_j} = \frac{\partial p(x)}{\partial x_j} \tag{2}$$

Since the dependent variable is unobserved, the model cannot be estimated with OLS. Instead, ML estimation are used, which requires assumptions about the distribution of the errors (Long 1997). Using a probit models assumes normal errors and $Var(\varepsilon \mid x) = 1$. Due to the nonlinearly, only the signs of the coefficients can be directly interpreted and not their sizes. Calculating the marginal effects is therefore a method to find the quantitative effect of an independent variable. The marginal effect indicates the change in the share of individuals (or the probability of) belonging actively to a voluntary environmental organization, when the independent variable increases by one unit. If the independent variable is a dummy variable, the marginal effect is evaluated in regard to the reference group.

In general, our models use standard error adjusted for the clustering on countries (except the first and third estimations in *Table 1*), thus taking into account unobservable country specific characteristics. Clustering leads to a decrease in the $z$-values, but has no impact on the marginal effects.

A weighting variable has been applied to correct the samples and thus to get a reflection of the national distribution. In the estimations where we pooled several countries we have integrated an additional weighting variable. The original weight variable has been multiplied by a constant for each country to get an equal number of weighted observations (around 1500) for each survey. The World Values Survey provides the weighting variables. Furthermore, "I don't know" answers and missing values were omitted from all estimations.

## DATA AND VARIABLES

As mentioned, the data used in the present study are taken from the World Values Survey (WVS), a worldwide investigation of socio-cultural and political change, based on representative national samples. It was first carried out in 1981-83, and subsequently in 1990-91, 1995-96 and 1999-2001. Data from these surveys are made publicly available for use by researchers interested in how views change with time. The interesting aspect in this paper is to use a behavioral variable instead of an attitudinal one to investigate environmental involvement or environmental preferences. Moreover, we decided to use the WVS data as it covers a broad variety of countries and variables which allow to investigate in detail the determinants of participating actively in environmental organizations at the micro-level.

Certainly, it can also be discussed whether it is more adequate to use an index instead of a single question to proxy the level of participation. We believe that one single question has the advantage that problems arising due to the complexity of an index can be eliminated, especially regarding the measurement procedure or a low correlation between the items. We also observe that many studies on environmental attitudes typically measure environmental values using a single item[7]. Moreover, several studies on volunteering use single questions as well (Cappellari and Turati, 2004; Bekkers, 2005).

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Even so, we recognize that there are some good reasons to use a multi-item index instead of a single question. For example, a single-item measure may have difficulty in capturing adequately the interrelated facets of participation and volunteering, and may also be adversely affected by random errors in measurement. Further, a multi-item index has the advantage that errors should tend to average out, therefore producing a more reliable measure. Compared to a single-item measure, a multi-item index is likely to provide a better score reliability by pooling information the items have in common; a multi-item tool also increases validity by providing a more representative sample of information about the underlying concept, and it increases precision by decreasing score variability.

Countries with fewer than 750 observations (Montenegro, the Dominican Republic, Ghana, Pakistan, and Tambov) were excluded from the sample to reduce possible biases due to a lack of representativeness. Several other countries were excluded as they do not provide information regarding the dependent and independent variables integrated in our estimations[8]. Finally, Sweden could not be included as one of the control variables (EDUCATION) is coded differently. We proceed with a sample of 38 countries[9]. The estimations are also performed for various geographic sub-samples to compare the relevance of our independent variables in different environments.

A multivariate analysis allows to shed some light on who is going to participate, whose priorities and values are forwarded through voluntary activities and to what extent voluntary participation can achieve representativeness. We have chosen the independent variables based on previous literature on pro-environmental behaviours and volunteerism in Section II. First of all, we consider several *socio-demographic and economic* variables. This allows to focus in a first step on "external" factors. A traditional economic approach would suggest that volunteers would mostly be individuals with low opportunity costs of time (Freeman, 1997). However, we will see in the empirical part that the opportunity cost argument fails to predict consistently the probability of participating in environmental organizations. On the other

hand, our results are consistent with several previous findings in the area investigating environmental behavior and environmental preferences. In a second step we include political attitudes using three different proxies to check the robustness. Tables A1 to A3 in the Appendix provide descriptions of these variables.

Instead of using AGE as a continuous variable, we use four dummy variables for age cohorts: AGE<30, AGE 30-49, AGE 50-64, and AGE 65+, with AGE<30 as a reference group, to better investigate the impact of age. It is expected that the number of individuals who are actively involved in environmental organizations falls with an increase of age, since older people will not live to enjoy the benefits of preserving resources for later years. However, old people become more cautious, more risk averse and more conservative, and they have more free time, so the expectation can be also positive. GENDER and MARITAL STATUS are further dummy variables. From the results of previous studies no clear prediction can be formulated for GENDER, while for MARITAL STATUS, a positive relation is expected. Finally, EDUCATION (continuous variable, 1 = no formal education, 9 = university degree) may also be a key variable, having a positive impact.

As a proxy for income we use the economic situation of an individual (dummy variable for UPPER CLASS with the remaining individuals in the reference group). Using the exact income would produce biases, because this variable is not comparable across different countries. On the one hand side, it is expected that wealthier citizens may have a higher demand for a clean environment and less environmental damages and thus a stronger incentive to actively contribute to the environment participating in a voluntary organization. On the other hand, they can lose more money if they spend their time in voluntary organizations, so their opportunity cost of time is very high. Furthermore, we control for FINANCIAL SATISFACTION (scale 1 = dissatisfied to 10 = satisfied). Participation may depend on the *perceived* restrictions of an individual. If a person is not satisfied with her

financial situation, she has a stronger incentive to spend more time and resources in the accumulation of additional wealth rather than spending time in voluntary organizations.

Finally, another variable that approaches and complements the economic situation of individuals is their occupational status (EMPLOYMENT STATUS). In addition to a dummy variable for unemployment, we use a dummy variable for self-employed individuals. Self-employed people may have higher opportunity costs to be involved in a voluntary organization. On the other hand, it may allow to establish connections that could positively influence also their business. Generally speaking, the participation is supposed to strongly depend on the type of sector and company a person is active in. Thus, it is not possible to derive a clear prediction.

The models also include regional dummy variables for the CEE and FSU (Central and Eastern Europe and Former Soviet Union countries), LATIN AMERICA, ASIA and AFRICA[10], leaving the industrialized economies of WESTERN EUROPE, USA, and AUSTRALIA in the reference group.

In a first step we only included "external" factors. Thus, we have avoided to include preferences and values in the model. We are aware that such an approach has its limitation and that it does not provide a complete picture of the determinants of environmental engagement. Thus, in a second step, we include political characteristics. Torgler and Garcia-Valiñas (2005), for example, have shown that political interest has a strong impact on environmental preferences. We will use several proxies to check the robustness of the results (level of: DISCUSSING POLITICS[11], INTEREST IN POLITICS[12] and IMPORTANCE OF POLITICS[13]). On the other hand, it can be assumed that politically interested people are well-informed and have a high level of current knowledge about what is going on in politics and thus may also be aware of environmental issues. Compared to other determinants, the aspect of political interest has been widely neglected in the environmental literature.

Finally, we have defined a variable which approximates the states capacities regarding environmental participation. In developed countries states offer many valid channels for citizens' actions and expression of preferences. The democratic structure allows individuals to a certain extent to control and influence the government. Furthermore, the government has a higher incentive to take into account citizens' preferences. On the other hand, weak and dysfunctional states induce people to pursue their goals via the non-governmental sector, as in environmental organizations. Thus, we have considered the perceived level of corruption. Woolcock (1998) points out that the "structure of the state, the nature and extent of its involvement in civic and corporate life, and the organization of society together constitute the key factors determining whether a country succeeds or fails in development" (p. 187). To assess the level of perceived corruption from the WVS, we use the following question:

How widespread do you think bribe taking and corruption is in this country?
Almost no public officials are engaged in it (1)
A few public officials are engaged in it (2)
Most public officials are engaged in it (3)
Almost all public officials are engaged in it (4)

PERCEIVED CORRUPTION is in line with other indexes such as the Transparency International that also measures perceptions. However, perceptions are not objective and quantitative measures of the actual degree of corruption. It is an indirect way of measuring corruption (Tanzi, 2002). However, analyzing the Transparency International Treisman (2000, pp. 410-411) brings valid arguments why data based on perceptions should be taken seriously. Components of the used surveys and ratings are highly correlated among themselves, although they have been established with different methodologies, different inputs and in another time period. Such a consistency allows to conclude that factors are almost free of biases such as a "temporal mood" or guesses. There is also a consistency in the Transparency International over time, although the construction of the index varies over time.

Finally, the index is strongly correlated with other corruption indexes such as the ICRG, the BI or the Gallup International. Tanzi (2002) points out:

"If corruption could be measured, it could probably be eliminated" (p. 38).

A good feature to test whether the World Values Survey question about PERCEIVED CORRUPTION is a useful proxy is to check whether the variable is correlated with other well-known indexes on corruption. Thus, we compare our variable with the corruption indexes TI (Transparency International), International Country Risk Guide (ICRG) and Quality of Government (Control of Corruption) developed by Kaufmann, Kraay, and Mastruzzi (2003). The World Values Survey Corruption ratings are highly correlated with the TI (r= -0.878), the ICRG (r=-0.680) and the Quality of Government rating (r=-0.827)[14].

## EMPIRICAL EVIDENCE

This section reports two groups of estimation results: a panel analysis of all 38 countries (*Tables 1, 2, and 7*) and panel estimates from four geographic regions (*Tables 3* to *6*). The primary objective is to investigate the robustness of our independent variables across countries with different cultural and institutional characteristics and with different levels of economic development.

*Table 1* presents the first results using the entire panel of countries. We observe that all age groups from 30 to 65+ report a significantly lower probability of participation in environmental organizations than the reference group below 30. However, only the coefficient AGE 65+ is statistically significant in the first two estimations. Being at the AGE 65+ reduces the probability of participating in environmental organizations by 1.3 percentage points (see specifications 1 and 2). Interestingly, we can observe that the marginal effects increase

consistently with each additional increase in the age variables. This result supports our prediction of a negative correlation between age and environmental participation. The lower long-term benefits of preserving resources for later years strongly reduce the incentives of older people to participate in environmental organizations. On the other hand, for the third estimation including regional dummy variables the coefficient is not statistically significant any longer. Interestingly, women report a lower probability of participating in environmental organizations. Being a woman reduces the probability of participating in voluntary environmental organizations by almost 1 percentage point. One can argue that these results contradict some previous findings showing that women are more concerned with environmental issues and the opportunity cost argument as women on average have a lower simple *cost* of time. However, it can be argued that women might be more active in community-based and neighborhood organizations which address local environmental issues, while men are more likely to participate in formal environmental organizations. Our survey question captures more of the latter than the former – for this reason, our results may not be in great conflict with opposite findings. Moreover, it should be noted that women have higher restrictions to participate in voluntary organizations, especially the younger ones, as they are often more strongly involved in household activities which are time intensive. There might though be cultural differences, insofar as gender differences may be less visible in Western societies where women are more independent.

[TABLE 1 ABOUT HERE]

A positive relation between formal education and environmental participation can be observed. The coefficient is highly statistically significant in all three estimations. Similarly, there is a positive correlation between the economic variables and the participation in voluntary environmental organizations. Only in the second estimation the coefficient UPPER

CLASS loses its statistical significance; but in general the marginal effects are quite substantial. Being a member of the upper class increases the probability of participation by 1.5 percentage points. There is also the tendency that self-employed persons have a higher level of participation in environmental organizations. In the first two regressions the coefficients are statistically significant with relatively high marginal effects of 1.7 percentage points. However, when including regional dummies (in the third specification), the coefficient loses its significance which indicates that we may expect cultural differences. On the other hand, the coefficient UNEMPLOYED has a negative sign and is not statistically significant although it could be argued that unemployed individuals' opportunity costs of participating in voluntary organizations are lower. Our findings give hardly any empirical foundation to the theoretical argumentation about individuals' opportunity costs of time, which is consistent with the study of Freeman (1997) who finds that volunteers are people with higher potential earnings or greater demands on their time.

We also find regional differences in terms of participating in environmental organization (see equation 3). Interestingly, inhabitants of LATIN AMERICA, ASIA and AFRICA have a higher probability to participate in voluntary environmental organizations than those of Western societies. Only the coefficient CEE and FSU shows a statistically significant negative sign with relatively high marginal effects of around 2.4 percentage points. The results somehow support the argument of Dekker and Van den Broek (1998) who stress that in the West there "is the widespread concern about the presumed decline in social and political engagement in Western society, which is claimed to affect volunteering too. Civic commitment to the common good is supposed to be eroding, due to various interconnected trends associated with modernization: rationalization, at the expense of traditional religious values and moral obligations; the ascent of individualism, manifesting itself in values of autonomy, self-realization, and personal freedom; and the concomitant rise of the "calculative citizen," which hampers pro-social behavior in general and volunteering in particular" (p. 16).

However, the authors also stress that against such a pessimistic interpretation it can be argued that individualistic concepts of self-realization and responsibility might as well stimulate pro-social behavior. The low participation in CEE and FSU is no surprise. It can be seen as an indicator of the transition process, where the socio-economic conditions confronting the citizens suddenly deteriorated on a massive scale and the level and quality of life declined even further. The rapid collapse of institutional structures produced a vacuum in the country, followed by worsening income inequality and poverty rates (Alm, Martinez-Vazquez and Torgler 2006). However, these results should be interpreted with caution as the number of countries in each region is limited.

In *Table 2* we extend the previous model including three different measurements of political interest including one behavioral variable (degree of political discussion). One of the key findings in this study is the fact that political interest is highly correlated with the willingness to contribute. An increase in the level of discussing politics by one unit increases the probability of participating by almost 1 percentage point (see specification 4). This result is confirmed when using two further proxies (INTEREST IN POLITICS and IMPORTANCE OF POLITICS, see specification 5 and 6). Thus, the paper shows that we have to go beyond formal education and include individuals' interest for current political matters. This aspect has been neglected in many previous studies. It is worthwhile to mention that the impact of the variable EDUCATION is not affected by the inclusion of political characteristics.


[TABLE 2 ABOUT HERE]


Next, we report the effect of the independent variables in the four regions[15]. It can be argued that the observed effects in the panel of countries reported in *Tables 1* and *2* are driven by one of the regions. It is also possible that some variables act differently in the different regions. *Tables 3* to *6* present these results. There are no statistically significant differences

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between the age categories except for ASIA where the group AGE 50-64 has the highest probability of participating in voluntary environmental organizations. Gender differences are observable in all regions except in Western societies, with the strongest marginal effects for Asia. Education is positively correlated with participation and mostly statistically significant in the reference group (Western Europe, USA and Australia), Latin America and Asia.

Financial satisfaction affects the participation in Western societies, in Latin America and in CEE and FSU countries but not in Asian countries. In Asia, the coefficient UPPER CLASS is even statistically significant with a negative sign showing marginal effects of around 2.5 percentage points. In general, the strongest positive impact of the economic variables is visible in Latin America. On the other hand, Latin America also shows the strongest impact of the employment status variables, but with a negative sign. Being self-employed reduces the probability of participating in environmental organizations by around 1.7 percentage points. Finally, we observe very consistent findings for the impact of political discussion and political interest. In all four regions the coefficients are always statistically significant with relatively high marginal effects compared to the other variables.

[TABLE 3 TO 6 ABOUT HERE]

The results obtained in the tables above showed that inhabitants of the developing continents were more likely to participate in environmental organizations that those living in western societies. Thus, in the light of those findings it would be interesting to investigate the impact of the states' capacities regarding environmental participation. The results including our corruption variable are presented in *Table 7.* To check the robustness, we present three estimations. The first one is without the regional dummy variables (specification 29), the second one includes the regional dummy variables (specification 30) and the third one includes additionally the political interest variable with the strongest marginal effects

(DISCUSSING POLITICS, specification 31). As can be seen, the coefficient of CORRUPTION remains highly statistically significant with marginal effects between 0.4 and 0.8 percentage points. Thus, a higher perceived corruption is correlated with a stronger incentive to participate in environmental organizations. If individuals perceive a lack of institutional quality they seemed to be willing to find alternative ways to pursue their goals.

[TABLE 7 ABOUT HERE]

## CONCLUDING REMARKS

Since the 1970s, the number of environmental studies has been growing. However, there is still a lack of papers that investigate the determinants of participating in voluntary environmental organizations. The rapid growth of the social capital literature inspired our efforts to check in detail the determinants of this variable. In an environmental context, social capital seems to improve the effectiveness of public environmental policies. Additionally, non-active forms of participation in environmental groups don't generate positive environmental outcomes (Pretty and Smith, 2004).

Furthermore, it is a promising line to search empirically for factors mostly neglected in previous studies such as political discussion and political interest. This empirical study analyses a cross-section of individuals using the World Values Survey wave III (1995-1997) covering 38 countries. The estimations not only investigate regional differences but are also performed for various geographic sub-samples to compare the relevance of our independent variables in different environments. One of the major advantages of the data set is that different cultural regions can be investigated, i.e. we can assess the cross-culture robustness of our variables.

The results indeed indicate that there are differences between regions. Interestingly, inhabitants of LATIN AMERICA, ASIA and AFRICA have a higher probability to participate in voluntary environmental organizations than those of Western societies, but although we work with an extensive survey, regional differences should be interpreted cautiously, as only a limited number of countries is available for each category. We observe the tendency that environmental participation is used as a channel for action in developing countries, where weak and dysfunctional states make people pursue their goals through non-governmental sector activities. Such an argumentation is supported when investigating the impact of corruption on individuals' active participation in environmental organizations. A higher perceived corruption leads to an increased participation which shows that individuals are able to find alternative ways to express their preferences and take action.

However, our study provides further significant findings. It sheds some light on who is liable to participate, whose priorities and values are forwarded through voluntary activities and to what extent voluntary participation can become representative. The findings in the pooled estimations indicate the tendency of a negative correlation between age and environmental participation. Women report a lower probability of participating in environmental organizations. Interestingly, gender differences are observable in all regions except in Western societies, with the strongest marginal effects for Asia. The variables EDUCATION, FINANCIAL SATISFACTION, UPPER CLASS and SELF-EMPLOYED indicate a positive correlation with the probability of participating in environmental organizations, which shows that an argumentation based on individuals' opportunity costs is empirically not well founded.

In sum, the paper shows that socio-demographic and socio-economic variables help to understand what shapes individuals' propensity to participate in a voluntary environmental organization. This paper also shows the relevance of political discussion and political interest, variables that have mostly been neglected beforehand in the environmental literature. These

variables have a strong impact on the probability of participating in environmental organizations. All three proxies for political interest and political discussion have a statistically significant positive impact with relatively high marginal effects.

These findings can be useful in order to create and maintain social capital to better preserve the environment. As Pretty and Smith (2004) pointed out, it is important that international agencies, governments, and other organizations accept and understand that investment in the creation of social capital pays off. Thus, all kinds of efforts made to characterize the kind of people who participate actively in environmental organizations help assure the success of such investments.

## NOTES

1. For a well-written overview of the concept of social capital see Woolcock (1998).

2. Those authors analyzed some environmental organizations in rural communities. They found an evolution from reactive-dependence groups (static and created exclusively in reaction to a threat or a crisis), towards awareness-interdependence groups (more dynamic and interactive).

3. See Fransson and Gärling (1999) or Jensen (2002).

4. For an overview see Hunter et al. (2004).

5. Cappellari and Turati (2004) found that people who change their job for a higher salary are less likely to volunteer.

6. It has been shown that passive forms of participation do not lead to positive environmental outcomes (Pretty and Smith, 2004).

7. For a review see, e.g., Zelezny et al. (2000).

8. These countries are Poland, Japan, South Africa, Puerto Rico, Turkey, and Columbia.

9. Western Europe Countries & USA & Australia (USA, Western Germany, Eastern Germany, Switzerland, Australia, Norway Finland Spain), CEE and FSU (Bulgaria, Belarus, Estonia, Georgia, Latvia, Lithuania, Moldova, Armenia, Russia, Slovenia, Ukraine,  Azerbaijan, Serbia, Macedonia, Croatia, Bosnia-Hercegovina), Latin America (Mexico, Argentina, Brazil, Chile, Peru, Venezuela, Uruguay) Asia (South Korea, India, Taiwan, China, Philippines, Bangladesh), Africa (Nigeria).

10. Only one country represents Africa (Nigeria).

11. Question: 'When you get together with your friends, would you say you discuss political matters frequently, occasionally or never?'.

12. Question: 'How interested would you say you are in politics?'.

13. Question: 'How important is politics in your life?'.

14. The sign is negative because for all three ratings used (TI, ICRG and Quality of Government), a  higher score corresponds to a lower corruption.

15. Africa has not been considered independently, as Nigeria was the only African country in the data set.

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**TABLE 1**

**Determinants of Environmental Participation**

| WEIGHTED PROBIT | Coeff. | z-Stat. | Marg. Effects | Coeff. | z-Stat. | Marg. Effects | Coeff. | z-Stat. | Marg. Effects |
|---|---|---|---|---|---|---|---|---|---|
| | | | (1) | | | (2) | | | (3) |
| | | | | clustering on countries | | | | | |
| INDEPENDENT VARIABLES | | | | | | | | | |
| *a) Demographic Factors* | | | | | | | | | |
| AGE 30-49 | -0.020 | -0.63 | -0.001 | -0.020 | -0.54 | -0.001 | 0.025 | 0.74 | 0.001 |
| AGE 50-64 | -0.047 | -1.15 | -0.003 | -0.047 | -0.80 | -0.003 | 0.066 | 1.57 | 0.004 |
| AGE 65+ | -0.250*** | -4.33 | -0.013 | -0.250*** | -2.63 | -0.013 | -0.095 | -1.58 | -0.005 |
| FEMALE | -0.134*** | -5.22 | -0.009 | -0.134*** | -3.89 | -0.009 | -0.147*** | -5.61 | -0.008 |
| EDUCATION | 0.024*** | 3.82 | 0.002 | 0.024 | 1.32 | 0.002 | 0.050*** | 8.49 | 0.003 |
| *b) Marital Status* | | | | | | | | | |
| MARRIED | -0.035 | -1.20 | -0.002 | -0.035 | -1.04 | -0.002 | -0.016 | -0.54 | -0.001 |
| *c) Economic Variables* | | | | | | | | | |
| FINANCIAL SATISFACTION | 0.062*** | 11.92 | 0.004 | 0.062*** | 6.75 | 0.004 | 0.033*** | 5.86 | 0.002 |
| UPPER CLASS | 0.190** | 2.07 | 0.015 | 0.190 | 1.46 | 0.015 | 0.198** | 2.03 | 0.013 |
| *d) Employment Status* | | | | | | | | | |
| SELFEMPLOYED | 0.221*** | 5.73 | 0.017 | 0.221** | 2.40 | 0.017 | 0.039 | 1.00 | 0.002 |
| UNEMPLOYED | -0.058 | -1.23 | -0.004 | -0.058 | -1.10 | -0.004 | -0.051 | -1.03 | -0.003 |
| *e) Regions* | | | | | | | | | |
| CEE and FSU | | | | | | | -0.461*** | -11.31 | -0.024 |
| LATIN AMERICA | | | | | | | 0.188*** | 5.18 | 0.011 |
| ASIA | | | | | | | 0.204*** | 5.51 | 0.013 |
| AFRICA | | | | | | | 0.992*** | 14.14 | 0.131 |
| | | | | | | | | | |
| Pseudo R2 | 0.030 | | | 0.030 | | | 0.082 | | |
| Number of observations | 48362 | | | 48362 | | | 48362 | | |
| Prob > chi2 | 0.000 | | | 0.000 | | | 0.000 | | |

Notes: Robust standard errors and standard errors adjusted for clustering on countries. In the reference group are AGE<30, MALE, OTHER MARRIED STATUS, OTHER CLASSES, OTHER EMPLOYMENT STATUS, WESTERN EUROPE + USA + AUSTRALIA. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01. CEE: Central Eastern European Countries, FSU: Former Soviet Union Countries.

**TABLE 2**

**Environmental Participation and Political Interest**

| WEIGHTED PROBIT | Coeff. | z-Stat. | Marg. Effects (4) | Coeff. | z-Stat. | Marg. Effects (5) | Coeff. | z-Stat. | Marg. Effects (6) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| INDEPENDENT VARIABLES | | | | | | | | | |
| *a) Demographic Factors* | | | | | | | | | |
| AGE 30-49 | 0.006 | 0.18 | 0.000 | 0.005 | 0.15 | 0.0003 | 0.018 | 0.53 | 0.001 |
| AGE 50-64 | 0.038 | 0.90 | 0.002 | 0.033 | 0.77 | 0.002 | 0.052 | 1.22 | 0.003 |
| AGE 65+ | -0.113* | -1.83 | -0.005 | -0.113* | -1.83 | -0.005 | -0.107* | -1.75 | -0.005 |
| FEMALE | -0.117*** | -4.30 | -0.006 | -0.118*** | -4.34 | -0.006 | -0.138*** | -5.18 | -0.007 |
| EDUCATION | 0.040*** | 6.57 | 0.002 | 0.037*** | 5.95 | 0.002 | 0.043*** | 7.07 | 0.002 |
| *b) Marital Status* | | | | | | | | | |
| MARRIED | -0.018 | -0.58 | -0.001 | -0.014 | -0.44 | -0.001 | -0.014 | -0.46 | -0.001 |
| *c) Economic Variables* | | | | | | | | | |
| FINANCIAL SATISFACTION | 0.034*** | 5.95 | 0.002 | 0.033*** | 5.73 | 0.002 | 0.033*** | 5.69 | 0.002 |
| UPPER CLASS | 0.207** | 2.07 | 0.013 | 0.196* | 1.96 | 0.012 | 0.198** | 1.99 | 0.013 |
| *d) Employment Status* | | | | | | | | | |
| SELFEMPLOYED | 0.039 | 0.99 | 0.002 | 0.016 | 0.40 | 0.001 | 0.024 | 0.59 | 0.001 |
| UNEMPLOYED | -0.048 | -0.96 | -0.002 | -0.064 | -1.25 | -0.003 | -0.061 | -1.20 | -0.003 |
| *e) Regions* | | | | | | | | | |
| CEE and FSU | -0.453*** | -11.05 | -0.023 | -0.420*** | -10.13 | -0.021 | -0.442*** | -10.64 | -0.022 |
| LATIN AMERICA | 0.225*** | 6.08 | 0.014 | 0.277*** | 7.28 | 0.017 | 0.213*** | 5.81 | 0.013 |
| ASIA | 0.210*** | 5.58 | 0.013 | 0.290*** | 7.37 | 0.019 | 0.186*** | 4.94 | 0.011 |
| AFRICA | 1.008*** | 14.30 | 0.133 | 1.008*** | 14.72 | 0.131 | 0.961*** | 13.72 | 0.122 |
| **f) Political Interest** | | | | | | | | | |
| DISCUSSING POLITICS | 0.174*** | 7.89 | 0.009 | | | | | | |
| INTEREST IN POLITICS | | | | 0.153*** | 9.60 | 0.008 | | | |
| IMPORTANCE OF POLITICS | | | | | | | 0.116*** | 8.12 | 0.006 |
| Pseudo R2 | 0.088 | | | 0.095 | | | 0.089 | | |
| Number of observations | 47547 | | | 46500 | | | 47432 | | |
| Prob > chi2 | 0.000 | | | 0.000 | | | 0.000 | | |

Notes: Robust standard errors. In the reference group are AGE<30, MALE, OTHER MARRIED STATUS, OTHER CLASSES, OTHER EMPLOYMENT STATUS, WESTERN EUROPE + USA + AUSTRALIA. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01. CEE: Central Eastern European Countries, FSU: Former Soviet Union Countries.

**TABLE 3**

**Determinants of Environmental Participation in Western Europe, USA, Australia**

| WEIGHTED PROBIT CLUSTERING ON COUNTRIES | Coeff. | z-Stat. | Marg. Effects | Coeff. | z-Stat. | Marg. Effects | Coeff. | z-Stat. | Marg. Effects |
|---|---|---|---|---|---|---|---|---|---|
| | | (7) | | | (8) | | | (9) | |
| | | | | | | | | | |
| INDEPENDENT VARIABLES | | | | | | | | | |
| *a) Demographic Factors* | | | | | | | | | |
| AGE 30-49 | 0.076 | 1.55 | 0.005 | 0.079 | 1.63 | 0.005 | 0.064 | 1.18 | 0.004 |
| AGE 50-64 | -0.028 | -0.28 | -0.002 | -0.035 | -0.34 | -0.002 | -0.039 | -0.35 | -0.003 |
| AGE 65+ | -0.073 | -0.67 | -0.005 | -0.075 | -0.66 | -0.005 | -0.101 | -0.85 | -0.006 |
| FEMALE | -0.024 | -0.45 | -0.002 | -0.015 | -0.29 | -0.001 | -0.032 | -0.62 | -0.002 |
| EDUCATION | 0.076*** | 4.62 | 0.005 | 0.074*** | 5.32 | 0.005 | 0.071*** | 4.37 | 0.005 |
| *b) Marital Status* | | | | | | | | | |
| MARRIED | -0.035 | -0.79 | -0.002 | -0.031 | -0.70 | -0.002 | -0.033 | -0.71 | -0.002 |
| *c) Economic Variables* | | | | | | | | | |
| FINANCIAL SATISFACTION | 0.036** | 2.06 | 0.002 | 0.035** | 2.03 | 0.002 | 0.035** | 2.02 | 0.002 |
| UPPER CLASS | 0.090 | 0.63 | 0.007 | 0.085 | 0.58 | 0.006 | 0.077 | 0.54 | 0.006 |
| *d) Employment Status* | | | | | | | | | |
| SELFEMPLOYED | 0.042 | 0.44 | 0.003 | 0.046 | 0.48 | 0.003 | 0.043 | 0.44 | 0.003 |
| UNEMPLOYED | -0.131 | -0.82 | -0.008 | -0.152 | -1.06 | -0.009 | -0.110 | -0.69 | -0.007 |
| *e) Political Interest* | | | | | | | | | |
| DISCUSSING POLITICS | 0.099** | 2.29 | 0.007 | | | | | | |
| INTEREST IN POLITICS | | | | 0.093*** | 2.72 | 0.006 | | | |
| IMPORTANCE OF POLITICS | | | | | | | 0.131*** | 4.52 | 0.009 |
| Pseudo R2 | 0.034 | | | 0.037 | | | 0.039 | | |
| Number of observations | 10757 | | | 10785 | | | 10706 | | |

Notes: Standard errors adjusted for  clustering on countries In the reference group are AGE<30, MALE, OTHER MARRIED STATUS, OTHER CLASSES, OTHER EMPLOYMENT STATUS. Significance levels: * $0.05 < p < 0.10$, ** $0.01 < p < 0.05$, *** $p < 0.01$.

**TABLE 4**

**Determinants of Environmental Participation in CEE and FSU Countries**

| WEIGHTED PROBIT clustering on countries | Coeff. | z-Stat. (10) | Marg. Effects | Coeff. | z-Stat. (11) | Marg. Effects | Coeff. | z-Stat. (12) | Marg. Effects |
|---|---|---|---|---|---|---|---|---|---|
| **INDEPENDENT VARIABLES** | | | | | | | | | |
| *a) Demographic Factors* | | | | | | | | | |
| AGE 30-49 | -0.013 | -0.15 | -0.0003 | -0.006 | -0.07 | 0.000 | 0.038 | 0.51 | 0.0008 |
| AGE 50-64 | 0.026 | 0.25 | 0.0006 | 0.037 | 0.35 | 0.001 | 0.081 | 0.82 | 0.0018 |
| AGE 65+ | -0.046 | -0.77 | -0.0010 | -0.070 | -1.12 | -0.001 | -0.028 | -0.41 | -0.0006 |
| FEMALE | -0.187*** | -3.01 | -0.0041 | -0.191*** | -3.01 | -0.004 | -0.221*** | -3.67 | -0.0049 |
| EDUCATION | 0.019 | 1.15 | 0.0004 | 0.019 | 1.06 | 0.000 | 0.020 | 1.00 | 0.0004 |
| *b) Marital Status* | | | | | | | | | |
| MARRIED | -0.014 | -0.22 | -0.0003 | -0.007 | -0.11 | 0.000 | 0.006 | 0.09 | 0.0001 |
| *c) Economic Variables* | | | | | | | | | |
| FINANCIAL SATISFACTION | 0.038** | 2.55 | 0.0008 | 0.036** | 2.49 | 0.001 | 0.038** | 2.47 | 0.0008 |
| UPPER CLASS | 0.440 | 1.39 | 0.0161 | 0.430 | 1.36 | 0.016 | 0.412 | 1.31 | 0.0145 |
| *d) Employment Status* | | | | | | | | | |
| SELFEMPLOYED | 0.031 | 0.23 | 0.0007 | 0.044 | 0.31 | 0.001 | -0.005 | -0.04 | -0.0001 |
| UNEMPLOYED | -0.024 | -0.25 | -0.0005 | -0.043 | -0.39 | -0.001 | -0.083 | -0.81 | -0.0017 |
| *e) Political Interest* | | | | | | | | | |
| DISCUSSING POLITICS | 0.266*** | 4.11 | 0.0058 | | | | | | |
| INTEREST IN POLITICS | | | | 0.157*** | 3.86 | 0.003 | | | |
| IMPORTANCE OF POLITICS | | | | | | | 0.148** | 2.26 | 0.0032 |
| Pseudo R2 | 0.039 | | | 0.034 | | | 0.037 | | |
| Number of observations | 20597 | | | 20748 | | | 20510 | | |

Notes: Standard errors adjusted for clustering on countries In the reference group are AGE<30, MALE, OTHER MARRIED STATUS, OTHER CLASSES, OTHER EMPLOYMENT STATUS. Significance levels: * $0.05 < p < 0.10$, ** $0.01 < p < 0.05$, *** $p < 0.01$.

TABLE 5

**Determinants of Environmental Participation in Latin American Countries**

| WEIGHTED PROBIT | Coeff. | z-Stat. | Marg. Effects | Coeff. | z-Stat. | Marg. Effects | Coeff. | z-Stat. | Marg. Effects |
|---|---|---|---|---|---|---|---|---|---|
| clustering on countries | | (13) | | | (14) | | | (15) | |
| | | | | | | | | | |
| INDEPENDENT VARIABLES | | | | | | | | | |
| *a) Demographic Factors* | | | | | | | | | |
| AGE 30-49 | -0.020 | -0.35 | -0.002 | -0.023 | -0.41 | -0.002 | -0.022 | 0.18 | -0.002 |
| AGE 50-64 | 0.052 | 0.87 | 0.005 | 0.034 | 0.57 | 0.003 | 0.055 | 1.49 | 0.005 |
| AGE 65+ | -0.128 | -1.15 | -0.011 | -0.144 | -1.32 | -0.012 | -0.126 | -1.64 | -0.011 |
| FEMALE | -0.112* | -1.69 | -0.011 | -0.104 | -1.53 | -0.010 | -0.120* | -1.87 | -0.012 |
| EDUCATION | 0.037*** | 2.71 | 0.004 | 0.029** | 1.99 | 0.003 | 0.039*** | 2.93 | 0.004 |
| *b) Marital Status* | | | | | | | | | |
| MARRIED | 0.007 | 0.13 | 0.001 | 0.006 | 0.11 | 0.001 | 0.011 | -0.01 | 0.001 |
| *c) Economic Variables* | | | | | | | | | |
| FINANCIAL SATISFACTION | 0.042*** | 5.35 | 0.004 | 0.041*** | 5.23 | 0.004 | 0.042*** | 5.73 | 0.004 |
| UPPER CLASS | 0.684** | 2.13 | 0.112 | 0.628* | 1.79 | 0.097 | 0.642 | 1.10 | 0.102 |
| *d) Employment Status* | | | | | | | | | |
| SELFEMPLOYED | -0.172* | -1.72 | -0.015 | -0.207** | -2.17 | -0.017 | -0.203** | -1.98 | -0.017 |
| UNEMPLOYED | -0.118* | -1.70 | -0.010 | -0.104 | -1.48 | -0.009 | -0.130** | -2.03 | -0.011 |
| *e) Political Interest* | | | | | | | | | |
| DISCUSSING POLITICS | 0.085** | 2.18 | 0.008 | | | | | | |
| INTEREST IN POLITICS | | | | 0.152*** | 4.44 | 0.014 | | | |
| IMPORTANCE OF POLITICS | | | | | | | 0.071** | 2.09 | 0.007 |
| Pseudo R2 | 0.026 | | | 0.037 | | | 0.028 | | |
| Number of observations | 7392 | | | 7410 | | | 7385 | | |

Notes: Standard errors adjusted for clustering on countries In the reference group are AGE<30, MALE, OTHER MARRIED STATUS, OTHER CLASSES, OTHER EMPLOYMENT STATUS. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01.

**TABLE 6**

**Determinants of Environmental Participation in Asian Countries**

| WEIGHTED PROBIT<br>clustering on countries | Coeff. | z-Stat.<br>(16) | Marg.<br>Effects | Coeff. | z-Stat.<br>(17) | Marg.<br>Effects | Coeff. | z-Stat.<br>(18) | Marg.<br>Effects |
|---|---|---|---|---|---|---|---|---|---|
| INDEPENDENT VARIABLES | | | | | | | | | |
| *a) Demographic Factors* | | | | | | | | | |
| AGE 30-49 | 0.029 | 0.60 | 0.003 | 0.034 | 0.60 | 0.004 | 0.037 | 0.80 | 0.004 |
| AGE 50-64 | 0.170*** | 2.64 | 0.017 | 0.171* | 1.87 | 0.020 | 0.147** | 2.14 | 0.015 |
| AGE 65+ | -0.285 | -1.17 | -0.021 | -0.148 | -0.66 | -0.014 | -0.241 | -1.31 | -0.019 |
| FEMALE | -0.170** | -2.18 | -0.015 | -0.212*** | -2.94 | -0.022 | -0.226*** | -3.05 | -0.022 |
| EDUCATION | 0.039 | 1.63 | 0.004 | 0.034 | 1.55 | 0.004 | 0.046** | 2.19 | 0.004 |
| *b) Marital Status* | | | | | | | | | |
| MARRIED | 0.032 | 0.60 | 0.003 | 0.057 | 1.21 | 0.006 | 0.020 | 0.42 | 0.002 |
| *c) Economic Variables* | | | | | | | | | |
| FINANCIAL SATISFACTION | -0.002 | -0.30 | 0.000 | 0.001 | 0.10 | 0.000 | -0.006 | -0.84 | -0.001 |
| UPPER CLASS | -0.360** | -2.27 | -0.024 | -0.363** | -2.23 | -0.029 | -0.347** | -2.30 | -0.025 |
| *d) Employment Status* | | | | | | | | | |
| SELFEMPLOYED | 0.185* | 1.83 | 0.019 | 0.117 | 1.14 | 0.013 | 0.165 | 1.54 | 0.017 |
| UNEMPLOYED | 0.155 | 1.46 | 0.016 | 0.058 | 0.68 | 0.006 | 0.128 | 1.19 | 0.013 |
| *e) Political Interest* | | | | | | | | | |
| DISCUSSING POLITICS | 0.334*** | 7.67 | 0.030 | | | | | | |
| INTEREST IN POLITICS | | | | 0.171** | 2.17 | 0.018 | | | |
| IMPORTANCE OF POLITICS | | | | | | | 0.115*** | 2.94 | 0.011 |
| Pseudo R2 | 0.045 | | | 0.033 | | | 0.030 | | |
| Number of observations | 7065 | | | 5798 | | | 7087 | | |

Notes: Standard errors adjusted for clustering on countries In the reference group are AGE<30, MALE, OTHER MARRIED STATUS, OTHER CLASSES, OTHER EMPLOYMENT STATUS. Significance levels: * $0.05 < p < 0.10$, ** $0.01 < p < 0.05$, *** $p < 0.01$.

**TABLE 7**

**Environmental Participation and Corruption**

| WEIGHTED PROBIT | Coeff. | z-Stat. | Marg. Effects | Coeff. | z-Stat. | Marg. Effects | Coeff. | z-Stat. | Marg. Effects |
|---|---|---|---|---|---|---|---|---|---|
| | | (19) | | | (20) | | | (21) | |
| | | | | | | | | | |
| INDEPENDENT VARIABLES | | | | | | | | | |
| *a) Demographic Factors* | | | | | | | | | |
| AGE 30-49 | -0.009 | -0.24 | -0.001 | 0.034 | 0.88 | 0.003 | 0.020 | 0.50 | 0.002 |
| AGE 50-64 | -0.009 | -0.18 | -0.001 | 0.078 | 1.58 | 0.008 | 0.056 | 1.13 | 0.005 |
| AGE 65+ | -0.206*** | -2.93 | -0.017 | -0.087 | -1.22 | -0.008 | -0.108 | -1.47 | -0.009 |
| FEMALE | -0.125*** | -4.06 | -0.012 | -0.135*** | -4.41 | -0.013 | -0.112*** | -3.53 | -0.010 |
| EDUCATION | 0.036*** | 4.73 | 0.003 | 0.053*** | 7.66 | 0.005 | 0.044*** | 6.25 | 0.004 |
| *b) Marital Status* | | | | | | | | | |
| MARRIED | 0.013 | 0.37 | 0.001 | -0.013 | -0.38 | -0.001 | -0.013 | -0.36 | -0.001 |
| *c) Economic Variables* | | | | | | | | | |
| FINANCIAL SATISFACTION | 0.031*** | 4.67 | 0.003 | 0.035*** | 5.27 | 0.003 | 0.036*** | 5.44 | 0.003 |
| UPPER CLASS | 0.216* | 1.80 | 0.025 | 0.137 | 1.08 | 0.014 | 0.145 | 1.11 | 0.015 |
| *d) Employment Status* | | | | | | | | | |
| SELFEMPLOYED | 0.146*** | 3.28 | 0.015 | 0.014 | 0.32 | 0.001 | 0.017 | 0.38 | 0.002 |
| UNEMPLOYED | -0.032 | -0.55 | -0.003 | -0.074 | -1.27 | -0.006 | -0.076 | -1.29 | -0.007 |
| *e) Regions* | | | | | | | | | |
| LATIN AMERICA | | | | 0.181*** | 4.63 | 0.018 | 0.210*** | 5.27 | 0.020 |
| ASIA | | | | 0.246*** | 6.08 | 0.026 | 0.248*** | 6.02 | 0.026 |
| AFRICA | | | | 0.996*** | 13.28 | 0.187 | 1.003*** | 13.31 | 0.187 |
| **f) Political Interest** | | | | | | | | | |
| DISCUSSING POLITICS | | | | | | | 0.144*** | 5.62 | 0.013 |
| *g) Institutional Quality* | | | | | | | | | |
| CORRUPTION | 0.088*** | 4.82 | 0.008 | 0.035* | 1.86 | 0.003 | 0.039** | 2.02 | 0.004 |
| | | | | | | | | | |
| Pseudo R2 | 0.017 | | | 0.042 | | | 0.047 | | |
| Number of observations | 24672 | | | 24672 | | | 24313 | | |
| Prob > chi2 | 0.000 | | | 0.000 | | | 0.000 | | |

Notes: Robust standard errors. In the reference group are AGE<30, MALE, OTHER MARRIED STATUS, OTHER CLASSES, OTHER EMPLOYMENT STATUS, WESTERN EUROPE + USA + AUSTRALIA. Significance levels: * $0.05 < p < 0.10$, ** $0.01 < p < 0.05$, *** $p < 0.01$. CEE and FSU countries not included.

**APPENDIX**

**TABLE A1**

**Description of Variables**

| Variable | Derivation |
|---|---|
| AGE | DUMMIES<br>AGE 30-49, AGE 50-64, 65+ (reference group, AGE < 30) |
| GENDER | FEMALE (MALE in the reference group) |
| EDUCATION | Continuous variable<br>What is the highest educational level that you have attained?<br>1. No formal education<br>2. Incomplete primary school<br>3. Completed primary school<br>4. Incomplete secondary school: technical/vocational type<br>5. Complete secondary school: technical/vocational type<br>6. Incomplete secondary: university-preparatory type<br>7. Complete secondary: university-preparatory type<br>8. Some university-level education, without degree<br>9. University-level education, with degree |
| MARITAL STATUS | DUMMY: MARRIED=1, all other classes (divorced, separated, widowed, single) in the reference group. |
| FINANCIAL SATISFACTION | How satisfied are you with the financial situation of your household? (scale 1 = dissatisfied to 10=satisfied) |
| ECONOMIC CLASS | People sometimes describe themselves as belonging to the working class, the middle class, or the upper or lower class. Would you describe yourself as belonging to the:<br><br>DUMMY: UPPER CLASS, the rest (middle class, working class and lower class) is the reference group. |
| EMPLOYMENT STATUS | TWO DUMMIES: SELFEMPLOYED, UNEMPLOYED, the rest (part time employed, at home, student, retired, other) is in the reference group. |
| CORRUPTION | To assess the level of perceived corruption from the WVS, we use the following question:<br>How widespread do you think bribe taking and corruption is in this country?<br>Almost no public officials are engaged in it (1)<br>A few public officials are engaged in it (2)<br>Most public officials are engaged in it (3)<br>Almost all public officials are engaged in it (4) |

Source: Inglehart et al. (2000).

**TABLE A2**

**Descriptive Statistics**

| Variables | Obs. | Mean | Std. | Dev. | Min. |
|---|---|---|---|---|---|
| PARTICIPATION ENVIRONM. ORG. | 67478 | 0.035 | 0.185 | 0 | 1 |
| AGE 30-49 | 61015 | 0.429 | 0.495 | 0 | 1 |
| AGE 50-64 | 61015 | 0.181 | 0.385 | 0 | 1 |
| AGE 65+ | 61015 | 0.099 | 0.299 | 0 | 1 |
| FEMALE | 68735 | 0.518 | 0.500 | 0 | 1 |
| EDUCATION | 64067 | 5.329 | 2.302 | 1 | 9 |
| MARRIED | 65630 | 0.602 | 0.489 | 0 | 1 |
| FINANCIAL SATISFACTION | 65006 | 5.235 | 2.750 | 1 | 10 |
| UPPER CLASS | 64382 | 0.018 | 0.131 | 0 | 1 |
| SELFEMPLOYED | 65388 | 0.098 | 0.297 | 0 | 1 |
| UNEMPLOYED | 65388 | 0.093 | 0.291 | 0 | 1 |
| DISCUSSING POLITICS | 64627 | 1.849 | 0.654 | 1 | 3 |
| INTEREST IN POLITICS | 67349 | 2.279 | 0.955 | 1 | 4 |
| IMPORTANCE OF POLITICS | 63520 | 2.320 | 0.947 | 1 | 4 |
| CORRUPTION | 59078 | 2.936 | 0.826 | 1 | 4 |

**TABLE A3**

**Countries' Participation in Environmental Organizations**

| country | participation environmental org. (in %) | N |
|---|---|---|
| *Western Europe/USA/Australia* | | |
| USA | 9.073 | 1521 |
| Australia | 6.699 | 2045 |
| Western Germany | 2.976 | 1008 |
| Eastern Germany | 1.198 | 1002 |
| Switzerland | 4.996 | 1201 |
| Norway | 0.888 | 1126 |
| Finland | 1.114 | 987 |
| Spain | 2.560 | 1211 |
| | | |
| *CEE and FSU* | | |
| Bulgaria | 0.187 | 1072 |
| Belarus | 0.526 | 2092 |
| Estonia | 0.392 | 1021 |
| Georgia | 0.579 | 2589 |
| Latvia | 0.833 | 1200 |
| Lithuania | 0.398 | 1006 |
| Moldova | 1.321 | 984 |
| Armenia | 1.150 | 2000 |
| Russia | 0.441 | 2040 |
| Slovenia | 0.798 | 1003 |
| Ukraine | 0.569 | 2811 |
| Azerbaijan | 0.250 | 2002 |
| Serbia | 0.469 | 1280 |
| Macedonia | 2.312 | 995 |
| Croatia | 1.427 | 1191 |
| Bosnia-Hercegovina | 2.917 | 1200 |
| | | |
| *Latin America* | | |
| Mexico | 9.410 | 1509 |
| Argentina | 2.595 | 1079 |
| Brazil | 6.179 | 1149 |
| Chile | 3.800 | 1000 |
| Peru | 2.973 | 1211 |
| Venezuela | 5.518 | 1196 |
| Uruguay | 4.000 | 1000 |
| | | |
| *Asia* | | |
| South Korea | 6.200 | 1242 |
| India | 4.755 | 2040 |
| Taiwan | 1.656 | 1449 |
| China | 2.400 | 1500 |
| Philippines | 7.083 | 1200 |
| Bangladesh | 5.836 | 1525 |
| | | |
| *Africa* | | |
| Nigeria | 12.279 | 2769 |