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Abstract

The growing recognition of social capital as an important parameter necessary for shaping pro-environmental behaviour and attitudes is well established in the literature. In this paper, we investigate the extent to which various elements of social capital influences Swedish public's tendency to contribute financially or through lifestyle changes in order to protect the environment. The results from an ordered logistic regression show that individuals in Sweden are at least fairly willing to contribute toward environmental protection and that this decision is principally and significantly influenced by elements of social capital.

Keywords: Willingness to pay, Social capital, Environmental protection, Ordered logistic regression, Sweden
JEL code: A13, A14, Q50, Q51

1. Introduction

The extant environmental and resource economics literature has identified and highlighted several factors that drive people to make financial contributions toward the provision of a public good such as the environment (see Mitchell and Carson, 1989; Meyer and Lieber, 2010). The decision by individuals willing to pay for the environment can be explained by a combination of socio-economic and demographic variables such as income, age, education, marital status, etc. Yet an emerging strand of literature in environmental management has emphasized the critical role played by social capital in influencing pro-environmental attitudes and by extension individuals' tendency to contribute toward environmental quality improvements. Despite this recognition, studies in this area of research are limited but have been growing in the last few years. For example, recent evidence in the literature show robust indication social capital is positively linked to willingness to pay (WTP) for environmental goods, environmental regulation/policy and management success (see Gelissen 2007; Wiser, 2007; Torgler and García-Valiñas, 2007; Jones *et al.*, 2009, 2010; Polyzou *et al.*, 2011; Meyer and Liebe, 2010; Halkos and Jones, 2012; Kollmann *et al.*, 2012; Macias and Williams, 2014; Yogo, 2015; Pretty and Ward 2001; Pretty 2003; Pretty and Smith, 2003; Jones 2010; Miller and Buys, 2008; Polyzou *et al.*, 2011). Pretty and Ward (2001) emphasize that "…as long as people managed natural resources, they have engaged in collective action" and that the presence of high stocks of social capital elements promote collective action towards a common good, including environmental sustainability (Coleman, 1990; Putnam *et al.*, 1993; Jones *et al.*, 2009). Furthermore, Rupasingha *et al.*, (2000) avers that "when social capital is present, externalities are internalized, which has the effect of eliminating or reducing the free rider problem and misuse of public goods while at the same time increasing investments in public goods"

The main aim of this paper is to empirically investigate the extent to which social capital influences individual decision regarding WTP for environmental protection in Sweden. The main hypothesis we test in the paper is that *all things equal*, social capital is positively related to individuals' WTP for environmental quality in Sweden. We apply the ordered logistic model to environmental and social capital data obtained from the 2010 International Social Survey Programme (ISSP) on Sweden to achieve this aim. The Swedish ISSP survey reflects a nationally representative selected sample covering individuals aged 18-79 years residing in Sweden. It covered the period 2010-02-16 - 2010-05-05 using fixed form self-administered paper questionnaire. The purpose for the survey in Sweden was to examine the attitude of residents in Sweden on environmental issues and to compare it with the attitude of people in some forty countries as well as how the attitudes of Swedish residents have changed since 2000.

We contribute to the social capital-environment literature in three ways. In the absence of studies with explicit focus on modelling social capital and its link to the environment in Sweden, this is the first to fill the gap by modelling a large number of elements of social capital in the context of individuals' tendency to contribute toward environmental preservation. Secondly, by considering three different measures of WTP (i.e. higher taxes, prices and standard of living cuts), we illuminate evidence on the sensitivity of each of these measures to the elements of social capital. The motivation for this approach is based on the argument that even though social capital in its aggregate form may significantly predict willingness to contribute to the environment (e.g. Jones *et al.*, 2009; Jones *et al.*, 2010), individuals may react differently to each element in their decision on whether or not to make (significant) contribution to prevent environmental damage. The need to isolate and analyze each element is therefore a plausible justification. Finally, the evidence presented in the paper will be useful for environmental management and planning in Sweden. By incorporating or paying close attention to particular features of social capital embedded in communities in Sweden, success in the design and implementation of environmental regulation would be enhanced to a significant extent.

The remainder of the paper proceeds as follows. A brief literature discussion on the interface between social capital and WTP is presented in Section 2. The theoretical model, data and empirical model are treated under Section 3, while results and discussion are covered in Section 4. Section 5 ends the paper with some concluding remarks.

2. Social capital and WTP nexus

We present a brief review of related literature on social capital as a concept and its relation to willingness to contribute to the environment. Even though it has been in existence for a few decades now, the concept of social capital is characterized by divergent views regarding a unique definition or mode of measurement, making it a complex and multi-dimensional concept (Jones *et al.*, 2010). Furthermore, in spite of different authors defining it in different ways (Coleman, 1990; Fukuyama 1995, 1997; Putnam, 2000; Putnam *et al.*, 1993 Putnam, 1995), Putnam (1995)' definition elaborates on the key features of social capital when he stated that it represents "...features of social organizations such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit". Woolcock (1998) further emphasized the importance of information and acts of reciprocity in social capital. Woolcock defines social capital as "...the information, trust, and norms of reciprocity inherent in one's social networks". The conclusion from Woolcock (1998) is that "...one would expect communities blessed with high stocks of social capital to grow faster, cleaner, wealthier, more literate, better governed, and generally happier than those with low stocks, because their members are able to find and keep good jobs, initiate projects serving the public interests, costlessly monitor one another's behavior, enforce contractual agreements, and respond to citizens' concerns more promptly". Thus four key elements of social capital have so far emerged from the literature: social trust (generalized and/or particularized trust), institutional trust, degree of social networks and civic participation (individual or group) and compliance with social norms (Coleman, 1990; Putnam *et al.*, 1993; Putnam, 1995; Woolcock 1998).

On the relationship between pro-environmental attitudes and social capital, the literature suggests that individuals and communities endowed with high stocks of social capital tend to work together through cooperation for the benefit of the environment (Pretty and Ward 2001; Pretty 2003; Jones *et al.*, 2009). Social trust relates to the level of trust towards other people in general or specific groups of people (Polyzou *et al.*, 2011). Generalized trust is one of the most important components of social trust which also influences significantly the extent to which people would obey social norms and actively (or passively) be connected to various social networks. According to Pretty (2003) and Polyzou *et al.*, (2011), social trust (or generalized trust in particular) shapes people's perception and expectation that other people would act in a similar way (e.g. comply with environmental regulation) to achieve a common good for the society. Thus individuals willing to pay for the environment would significantly depend on the anticipated intention of others to do same (Wiser, 2007; Polyzou *et al.*, 2011; Macias and Williams 2014).

Secondly, WTP is also affected by the level of institutional trust (Jones *et al.*, 2009; Macias and Williams 2014) since institutions are supposed to be the trustees and implementers of environmental regulations to ensure environmental sustainability. Institutional trust (Narayan and Cassidy, 2001) is defined "as the extent to which citizens have confidence in public institutions to operate in the best interest of society and

its constituents" (Jin, 2013). The management and provision of public goods such as the environment is often undertaken by the state and its parastatals entrusted with such responsibilities. The credibility and legitimacy of environmental policies and hence implementation success depends on the extent to which the people trust responsible institutions. The lower the level of trust in the state actor tasked with the provision of the public good, the lower the likely valuation individuals will attach to the good in question which ultimately affects their WTP toward its provision. Indeed, the issue of mistrust in institutions has been found to be one of the main reasons for citizens' protest responses and lower WTP in many environmental valuation studies (Jones *et al.*, 2008; Polyzou *et al.*, 2011).

Bourdieu (1986) refers to social networks and civic participation as citizens' activation in formal and informal organizations. This generates relevant information flow concerning environmental issues which is connected to environmental awareness and behaviour (Jones *et al.*, 2010). Thus both forms of participation in social networks (i.e. at the individual and group level) influences an individual's tendency to engage in collective activities that preserves the environment and hence their WTP (Gelissen 2007; Jin, 2013).

Finally, compliance with social (or environmental) norms is a significant predictor of individual WTP similar to social trust (Jones *et al.*, 2009; Jones *et al.*, 2010). Social/environmental norms include formal and informal rules aimed at environmental protection (Coleman, 1990; Jones *et al.*, 2010). The extent to which individuals/communities would comply with these norms influences environmental behaviour. In places where there is high level of disregard for social norms, non-compliance of environmental regulation is pervasive (Jones *et al.*, 2009; Jones *et al.*, 2010). Thus social norms compliance will influence the functioning and effectiveness of proposed environmental policy and individuals' willingness to contribute to preserve the environment (Pretty, 2003; Jones *et al.*, 2010; Jin, 2013).

3. Theoretical and Empirical Models, and Data

3.1 Theoretical Model

We follow Yogo (2015) who modelled the link between WTP for the environment and the level of trust (a sole measure of social capital in the paper) for prediction regarding the WTP-social capital nexus in this paper. Yogo's model is a modification of Owen and Videras' (2008) model. Owen and Videras (2008) originally developed a model that looked at the implementation of local sustainability programmes (i.e. Local Agenda 21) and linked it to the level of trust and community cooperation. We argue in our paper that social capital cannot solely be represented by generalized trust, albeit considered one of the most important elements. Each element of social capital may influence individuals or groups differently (Jin, 2013) and hence their WTP for environmental services. Hence, instead of representing social capital by only generalized trust, we incorporate into our model various elements of social capital to help as understand how these affects individual decisions regarding environmental protection. Even though our model is not novel since it is based on Yogo (2015), it suffices for the purposes of understanding the theoretical link between WTP for the environment and its determinants of which social capital is considered important.

The model is based on a simple consumer choice framework to facilitate theoretical prediction of the specified empirical model (see Section 3.2). We consider an economic agent (i.e. an individual) with the possibility to choose between buying two different goods. The individual can decide to either buy more material goods at the detriment of the environment (i.e. goods that lowers environmental quality) or demand less of material goods for better environmental quality. Let z and e be the quantity of material goods and a measurable quality of the environment, respectively. This presents a potential trade-off in choosing an ecological product (e.g. ecolabel goods) and a product with adverse environmental effect (Yogo, 2015). The consumer choice behaviour follows a Cobb-Douglas utility function:

$$U = U(z,e) = \varepsilon z^\alpha e^{1-\alpha} \tag{1}$$

where $\alpha \varepsilon] \, 01 \, [$ denote the elasticity of utility from consumption of material goods and ε the residual variable that explains the individual's choice. Additionally, we assume that the price of the material good and ecological counterpart is given by P_z and P_e, respectively.

The individual can make own decision to give up more of the material good to inure to environmental quality improvement independent of what fellow citizens or all other individuals/consumers will do. This implies that the individual consumer does not anticipate any benefit in terms of better environmental quality given that the benefit to the environment accrues only if all other individuals reciprocate/cooperate or act similarly. Conversely, the individual can form an expectation that all other individuals will act in like manner as he did. Thus, he expects to gain g from better environmental quality. The gain can be thought of as follows: a clean environment would mean better health outcomes leading to improved productivity and individual incomes in the form of higher wages. This is the main point of departure of Yogo (2015) from Owen and Videras (2008) in the sense that in the former, the demand for better environmental quality may be higher in the presence of cooperation while the latter focuses on cooperation as the key ingredient for the implementation of environmental programmes.

Further, let p denote the probability the consumer assigns to the event that all other consumers will cooperate with him, and M the total available income to the consumer. The consumer then solves the following utility maximization problem:

$$\begin{aligned} Max \ U &= \varepsilon z^\alpha e^{1-\alpha} \\ s.t. \ P_z z + P_e e &= p(M+g) + (1-p)M \end{aligned} \tag{2}$$

Solving the above maximization problem (and setting $\varepsilon = 1$) yields the following first order conditions:

$$\lambda P_z = \alpha z^{\alpha-1} e^{1-\alpha} \tag{3}$$

$$\lambda P_e = (1-\alpha) z^\alpha e^{-\alpha} \tag{4}$$

Equations (3) and (4) combined yields:

$$z = \frac{\alpha}{(1-\alpha)} \frac{P_e e}{P_z} \tag{5}$$

Plugging (5) into the constraint, and invoking the assumption that all other individuals will act in similar way with probability p (i.e. $p = 1$) and simplifying, we obtain the following consumer demand for better environmental quality:

$$e = \frac{1}{P_e}(M + g)(1 - \alpha) \tag{6}$$

Equation (6) postulates that the demand for improved environmental quality, e (i.e. WTP for environmental good by the individual), is directly linked to income level of the individual. It also posits that the higher the expected gain, the higher the demand for better environmental quality whiles an inverse relationship is evident regarding demand for better environmental quality and price of the environmental good Social capital enters into our final econometric specification (equation 7) since we assume that the expected gain g is only realized if there is cooperation which is further assumed to be positively correlated with social capital (Owen and Videras, 2008; Yogo, 2015).

3.2   Empirical Model

On the basis of equation (6) and its predictions, we posit the following empirical model for estimation:

$$WTP_{it}^* = \beta_0 + \beta_1 SC_{it} + \beta_2 M_{it} + \gamma X_{it} + \nu_{it} \tag{7}$$

where WTP_{it}^* is the unobserved or latent WTP variable by individual i for the environmental good at time t; SC_{it} is a measure of social capital for individual i at time t; M_{it} is the individual's level of income; X_{it} is a vector of other controls which influences an individual's WTP for the environment while ν_{it} is the random error term; β_0, β_1, β_2 and γ are parameters to be estimated. The observed response modalities to *WTP* can be summarized as follows:

$$WTP = \begin{cases} 0 & \text{if } WTP^* \leq \mu_1 \\ 1 & \text{if } \mu_1 < WTP^* \leq \mu_2 \\ 2 & \text{if } \mu_2 < WTP^* \leq \mu_3 \\ 3 & \text{if } \mu_3 < WTP^* \leq \mu_4 \\ 4 & \text{if } \mu_4 < WTP^* \end{cases} \tag{8}$$

where respondent i is indifferent between available alternatives k and $k + 1$ at respective thresholds μ_k of the observed categorical WTP variable. We estimate equation (7) using maximum likelihood. Social capital (interpersonal and institutional trust, civic participation and adherence to social norms) is expected to impact positively on people's WTP for the environment (Kataria, 2009; Jones *et al.*, 2009; Jones *et al.*, 2010; Polyzou *et al.*, 2011; Halkos and Jones, 2012; Yogo, 2015). Likewise, the higher the level of income, the higher the likelihood that a respondent may be willing to contribute to protecting the environment for the common good (Broad 1994; Gelissen, 2007; Meyer and Liebe 2010; Polyzou *et al.*, 2011). Further, it is expected that the more concerned individuals are about the environment and its dynamics as well as more knowledgeable the public are regarding the enduring impact of environmental conditions on their daily survival, the more inclined they are likely to be pro-environmental and hence contribute to its protection (Macias and Williams, 2014). Also, the more educated a person is (e.g. through higher educational attainment), the higher the probability that such individual would be potentially informed about the

environment in general and the debilitating effect of anthropogenic (in) actions on it and hence be willing to sacrifice either financially or through attitudinal change that inures to the benefit of the environment (see Marquart-Pyatt, 2012; Macias and Williams, 2014). Since party affiliation also plays an important role in environmental issues (see for example Franzen and Vogl, 2013) and that those with green ideologies are more pro-environment than others, we would expect individuals affiliated to other political parties to be less willing to pay toward environmental protection relative to those affiliated to the Swedish Green Party (see Ivanova and Tranter 2004 in the case of Australia). We allow the effect of age, sex, household size and marital status to be determined empirically since their impact is not that obvious, with the evidence in the literature revealing conflicting outcomes

3.3 Data

The dataset for this paper are obtained from the most recent wave of survey on various aspects of the environment in the International Social Survey Programme (ISSP) conducted by the ISSP Research Group (2012) in 2010 (i.e. International Social Survey Programme: Environment III - ISSP 2010). This was the third in a series of cross-sectional surveys administered across 22 countries in 1993 (excluding Sweden), 27 in 2000 and 32 in 2010, respectively. The environment module of the ISSP survey covers issues from but not limited to environmental concern, attitudes to environmental protection and preferred government measures to environmental protection. Since Sweden was not included in the maiden edition of the survey, it is excluded from our analysis. The inclusion of Sweden in the second round in 2000 still did not qualify us to look at that year either because many questions regarding social capital were not asked. In particular questions related to trust in the government and related social capital indicators only featured comprehensively in the 2010 survey. This therefore limits the study to the extent that we are unable to assess changes over time regarding WTP for the environment as it relates to social capital in Sweden.

We use three different variables to measure WTP as our dependent variable (see Franzen and Meyer, 2010; Macias and Williams, 2014). Specifically, questions relating to an individuals' WTP higher taxes, prices and accept reduction in their standard of living have been utilized. The 2010 ISSP questionnaire asked specific questions relating to the following: 'How willing would *you* be to pay *much higher taxes* in order to protect the environment?'; How willing would *you* be to pay *much higher prices* in order to protect the environment?; and 'How willing would *you* be to *accept cuts* in your *standard of living* in order to protect the environment?'. The response categories to these questions are measured on a 5-point Likert scale as follows – (1) Very willing; (2) Fairly willing; (3) Neither willing nor unwilling[2]; (4) Fairly unwilling; (5) Very unwilling. We recode these responses in the reverse order in our empirical estimation. The five response categories allow us to comparatively investigate those who are less or more likely to pay for environmental quality improvement and those who are indifferent. Our use of all three WTP questions is to act as a check for robustness of the results to the various elements of social and other controls in the model.

The key explanatory variables in our model relates to indicators of social capital and their selection was heavily influenced by the literature on different questions used to measure the various components (Narayan and Cassidy, 2001; Macias and Williams, 2014; Jin and Shriar, 2013; Jones *et al.*, 2009, 2010; Polyzou *et al.*,

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[2] We denote this as 'Indifferent' in the estimated models.

2011; Halkos and Jones, 2012). Unlike others in the literature who use either exploratory or confirmatory factor analysis (EFA/CFA) to construct composite indices to measure overall social capital or sub-components of it (e.g. indices measuring networks, trust, norms and civic participation - Jin and Shriar, 2013; Jones *et al.*, 2009, 2010; Halkos and Jones, 2012; Yogo, 2015), we follow Polyzou *et al.*, (2011), Macias and Williams (2014) among others by disaggregating all the individual components selected from the survey to assess their relative explanatory power on people's WTP for the environment as each may influence individual choices differently. In this case, issues of aggregation bias potentially present in using a composite index of social capital could be averted.

We measure social trust (represented by generalized trust) based on the following question (van Oorschot *et al.*, 2006; Jones *et al.*, 2009). 'Would you say that most people can be trusted or you can't be too careful?'. The responses to the question are a 5-point Likert scale with lowest values denoting lowest trust levels. We recode the responses to a binary variable with 1 representing the response 'Most people can be trusted' and 0 otherwise. Institutional trust on the other hand is measured by the following question: 'Most of the time we can trust people in government to do what is right' with corresponding response 1 – strongly agree to 5 – strongly disagree. Again this response category is recoded in the reverse order for ease of interpretation before estimating its influence on WTP. Responses 'strongly agree' and 'agree' are grouped as a single response to represent trust in the government while the remainder denote no trust in the national government.

As a measure of compliance with social (or environmental) norms, we follow van Oorschot *et al.*, (2006) and Jin and Shriar (2013), to assess the degree to which individuals in Sweden comply with informal social norms of environmentally responsible behaviour within the context of recycling, food consumption, reduced driving (gasoline consumption), domestic/home energy conservation and goods purchasing behaviour. Specifically, we choose the following questions asked in the survey for our analysis: (1) 'How often do you make a special effort to sort glass or tins or plastic or newspapers and so on for recycling?'; (2) 'How often do you   make a special effort to buy fruit or vegetables grown without pesticides or chemicals?'; (3) 'How often do you cut back on driving a car for environmental reasons?'; (4) 'How often do you reduce the energy or fuel you use at home for environmental reasons?'; and (5) 'How often do you avoid buying certain products for environmental reasons?'. Answers to the above questions are based on a 4-scale response code ranging from 1 – 'Never' to 4 – 'Always'.

Civic participation, connoting the level of interest for public issues (Narayan and Cassidy 2001; Jones *et al.*, 2009) and a proxy for social networks is measured with three variables on a dichotomous scale (i.e. 'Yes I have=1' and 'No I have not=0'). The questions for the above responses include: In the last five years, have you…(1) 'given money to an environmental group?'; (2) 'taken part in a protest or demonstration about an environmental issue?'. Our final measure of civic participation is at the group or membership level on the same scale as the other two questions. The question regards whether or not respondent is a member of any group with the aim of preserving or protecting the environment.

Finally, we control for other relevant variables in the literature on WTP for the environment (see for example Meyer and Liebe, 2010). Following Kollmann *et al.*, (2012), we construct a binary variable from the

questionnaire relating to country-specific political party affiliation of respondents in Sweden. Since our interest, akin to Kollmann *et al.*, (2012) is to estimate how people affiliated to the Green Party respond to the WTP questions, we group all other political parties excluding those of the Green Party into one category and denote their response by 0, otherwise Green Party affiliation equal 1. Other environmentally responsible behaviour responses elicited and controlled for include whether or not one is generally concerned about the environment and also whether one responds on a 5-point Likert scale 'Agree strongly' - 'Disagree strongly' to the question 'Environmental problems have a direct effect on my everyday life.' We recode the environmental impact questions into 1(=Agree strongly; Agree) and 0(otherwise). Following the extant literature (Broad 1994; Dietz *et al.*, 1998; Israel and Levinson 2004; Olofsson and Öhman 2006; Jones *et al.*, 2009; Jones *et al.*, 2010; Meyer and Liebe 2010; Polyzou *et al.*, 2011; Halkos and Jones, 2012; Marquart-Pyatt 2012; Kollmann *et al.*, 2012; Yogo 2015; Macias and Williams, 2014), we control for socio-economic/demographic variables such as gender, age and its squared (to account for non-linearity effect of age), years of education, marital status, individual's household size and income (represented by a 5-scale income quintile). See Table A1 in appendix for detailed descriptive statistics on variables used in the analysis.

4. Results and discussion

4.1 Baseline

Before discussing the results, it is important to admit that we are unable to address potential issues of endogeneity between social capital and WTP (e.g. generalized trust and an individual's WTP) for the environment in the current paper. Finding appropriate variable(s) to instrument for social capital in the current instance was elusive from the survey data or other comparable sources. As more data become available, future studies could address this issue in the paper in order to solve the causal weaknesses inherent in the results.

The initial results for this study are shown in Tables 1 and 2. These represent the baseline results from the estimated ordered logit model independent of any individual controls that could potentially explain WTP for environmental quality except indicators of social capital. It is noteworthy here that we cannot interpret the logit results (i.e. parameter estimates) in the usual way, hence the marginal effects have been calculated for each response modality of WTP. It is also important that the results here are only correlational and therefore interpretation from a causal perspective must be done with considerable caution. The estimated marginal effect makes it possible for us to intuitively interpret the results in terms of how each variable affects the probability of WTP for the environment in the order from 'Very unwilling' to 'Very willing'. Thus, the five different modalities correspond to the observed dependent variable – WTP. Table 1 show results of individuals' willingness to contribute in relation to paying higher taxes to protect the environment and how social capital influences that decision. The extent to which people are willing to accept modifications to their way of life via cuts in their standard of living for the environment's sake are also presented in Table 2. The reason for considering these two types of willingness to contribute is to assess whether the various elements of social capital influence people's (pro-environmental) behaviour differently or in a similar way. Further, it is also a preliminary check for robustness of our results. Further sensitivity analysis is considered in subsequent results.

Results in Table 1 show that generalized trust is not a significant predictor of individuals' WTP for the environment through higher environmental taxes payments. This result imply that in Sweden, social trust is not the key influencing factor on people's decision to pay higher taxes to protect the environment. On the

other hand, we find institutional trust to be a significant variable in the determination of the public's decision to pay higher environmental taxes. This is not an unexpected result since it is generally believed that the more opened the government is to the people and by extension the tax office (tax administrators) in relation to the use of tax receipts to advance the common good by way of designing and implementing environmental policies to the latter, the more credible and legitimate the government becomes and hence people would be willing to contribute to this cause. The results in columns 5 and 6 for instance indicates that all other things equal, an increase in the level of trust in the government by a unit would increase the probability of 'fairly willing' and 'very willing' to pay higher environmental taxes by 6.6% and 1.5%, respectively. That higher trust in the government increases the willingness to pay more environmental taxes is well established in the literature (see Ivanova and Tranter 2004; Kollmann and Reichl 2013; Macias and Williams 2014). Expectedly, being a member of an environmental organization increases the probability to accept payment of higher environment taxes in Sweden. Holding all other factors constant, the probability of paying fairly higher environmental taxes increases by 14.6% (see 'fairly willing') given that one is a member of an environmental organization with the aim of protecting the environment than if one were not a member. This is congruent with the literature (e.g. Torgler and García-Valiñas (2007); Kataria 2009; Macias and Williams 2014). Other significant elements of civic participation relate to whether an individual ever donated money to an environmental organization or has taken part in an environmental protest in the last five years. Further, compliance with social norms to some extent explains peoples' willing to pay higher environmental taxes in Sweden. Specifically, people who make special effort in cutting back on driving personal cars (riding bicycles or patronizing public transport for example) or avoid buying some products for environmental reasons are also likely to contribute more taxes toward preventing environmental damage. Recycling, food purchasing and domestic energy use behaviour do not seem to be significant social (environmental) norm drivers of WTP.

The results in Table 2 seem to confirm some of the earlier findings on tax payment except here we find that generalized trust is significant in influencing individuals' decision to accept cut in their standard of living to save the environment. Generally, people would expect others to act similarly in making sacrifices for the common good of the environment – in this case making significant lifestyle changes to inure to environmental quality improvement. If other citizens free-ride, compliers are likely to change their behaviour toward the line of non-compliance. Hence the results bode well for understanding personal decisions regarding pro-environmental attitudinal changes in relation to influences of what others do. From the results, individuals who assert that generally 'most people can be trusted' also increase their probability of 'fairly willing' and 'very willing' to accept cuts in standard of living by about 6.6% and 2.7%, respectively. Expectedly, the probability of those 'very unwilling' or 'fairly unwilling' to accept such cuts but believe 'most people can be trusted' reduces by some 3.1% and 4.9%, respectively. Institutional trust (i.e. trust in the government) does not come out significant here compared with WTP higher taxes observed in Table 1. However, similar to the other findings, being a member of an environmental organization significantly influences one's willingness to sacrifice for the environment. In the same vein, donation to an environmental organization or having taken part in some environmental activism (i.e. protest) in the past five years significantly influence the decision to reduce standard of living in order to protect the environment in Sweden. Finally, all elements related to social norms compliance are significant drivers of the pro-environmental attitude of standard of living trade-off except for waste recycling and food purchasing behaviour.

The evidence from the baseline results suggest that social capital has significant impact on people's willingness to contribute toward environmental sustainability depending on the specific element under consideration.

Table 1. WTP higher environmental taxes and effect of social capital

Variables	ologit coeff.	WTP: Pay higher taxes				
		Marginal Effects				
		Very unwilling	Fairly unwilling	Indifferent	Fairly willing	Very willing
Social trust						
Generalized trust	0.0591	-0.0089	-0.0039	0.0035	0.0078	0.0015
	(0.1388)	(0.0167)	(0.0077)	(0.0064)	(0.0150)	(0.0030)
Institutional trust						
Trust in the government	0.4683***	-0.0636***	-0.0385***	0.0213***	0.0661***	0.0146***
	(0.1239)	(0.0121)	(0.0097)	(0.0034)	(0.0150)	(0.0043)
Civic participation & social networks						
Member of an environmental organization	0.9870***	-0.1156***	-0.0941***	0.0248***	0.1457***	0.0391**
	(0.3464)	(0.0237)	(0.0314)	(0.0058)	(0.0420)	(0.0173)
Donated money to an environmental org.	0.3472**	-0.0487***	-0.0270**	0.0173***	0.0482***	0.0103**
	(0.1499)	(0.0155)	(0.0109)	(0.0048)	(0.0176)	(0.0044)
Taken part in an environmental protest	0.5080	-0.0682**	-0.0424	0.0224***	0.0721	0.0162
	(0.3672)	(0.0345)	(0.0295)	(0.0081)	(0.0447)	(0.0117)
Compliance with social norms						
Sort waste for recycling	0.0582	-0.0089	-0.0037	0.0035	0.0076	0.0015
	(0.1102)	(0.0137)	(0.0056)	(0.0054)	(0.0116)	(0.0023)
Purchase chemical-free fruits and vegetables	0.0797	-0.0122	-0.0051	0.0048	0.0105	0.0020
	(0.0920)	(0.0114)	(0.0047)	(0.0045)	(0.0098)	(0.0019)
Cut back on driving	0.3741***	-0.0573***	-0.0233***	0.0221***	0.0489***	0.0096***
	(0.0991)	(0.0123)	(0.0049)	(0.0046)	(0.0104)	(0.0025)
Reduce household energy use	0.0683	-0.0105	-0.0043	0.0041	0.0090	0.0017
	(0.0873)	(0.0108)	(0.0045)	(0.0043)	(0.0092)	(0.0018)
Avoid buying non-green products	0.4941***	-0.0756***	-0.0302***	0.0286***	0.0643***	0.0129***
	(0.1119)	(0.0135)	(0.0056)	(0.0049)	(0.0114)	(0.0033)
Observations	938	938	938	938	938	938
Log-likelihood	-1281	-1281	-1281	-1281	-1281	-1281
Prob.>chi²	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo-R2	0.0612	0.0612	0.0612	0.0612	0.0612	0.0612
Controls	No	No	No	No	No	No

Threshold

μ_1 =1.1681***(0.4109); μ_2 =2.7949***(0.4219); μ_3 =4.0157***(0.4352); μ_4 =6.5985***(0.4722)

Note: Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 2. WTP cut standard of living and effect of social capital

Variables	ologit coeff.	WTP: Cut in standard of living				
		Marginal Effects				
		Very unwilling	Fairly unwilling	Indifferent	Fairly willing	Very willing
Social trust						
Generalized trust	0.4389***	-0.0308***	-0.0485***	-0.0145**	0.0664***	0.0273***
	(0.1427)	(0.0071)	(0.0125)	(0.0060)	(0.0165)	(0.0087)
Institutional trust						
Trust in the government	0.0379	-0.0031	-0.0042	-0.0006	0.0059	0.0020
	(0.1235)	(0.0080)	(0.0111)	(0.0018)	(0.0155)	(0.0054)
Civic participation & social networks						
Member of an environmental organization	0.5108**	-0.0349***	-0.0562***	-0.0182*	0.0765***	0.0327**
	(0.2501)	(0.0115)	(0.0217)	(0.0110)	(0.0285)	(0.0155)
Donated money to an environmental org.	0.6016***	-0.0397***	-0.0657***	-0.0235***	0.0890***	0.0399***
	(0.1435)	(0.0069)	(0.0122)	(0.0069)	(0.0158)	(0.0098)
Taken part in an environmental protest	0.5713	-0.0381**	-0.0625*	-0.0217	0.0849*	0.0375
	(0.4333)	(0.0185)	(0.0368)	(0.0208)	(0.0482)	(0.0278)
Compliance with social norms						
Sort waste for recycling	0.0433	-0.0036	-0.0048	-0.0006	0.0068	0.0023
	(0.1011)	(0.0067)	(0.0091)	(0.0012)	(0.0127)	(0.0043)
Purchase chemical-free fruits and vegetables	0.0132	-0.0011	-0.0015	-0.0002	0.0021	0.0007
	(0.0916)	(0.0061)	(0.0082)	(0.0011)	(0.0115)	(0.0039)
Cut back on driving	0.3406***	-0.0283***	-0.0374***	-0.0050***	0.0526***	0.0180***
	(0.0944)	(0.0067)	(0.0080)	(0.0019)	(0.0114)	(0.0044)
Reduce household energy use	0.2760***	-0.0229***	-0.0304***	-0.0041**	0.0428***	0.0146***
	(0.0867)	(0.0059)	(0.0075)	(0.0017)	(0.0105)	(0.0041)
Avoid buying non-green products	0.4074***	-0.0339***	-0.0444***	-0.0059***	0.0626***	0.0216***
	(0.1067)	(0.0076)	(0.0090)	(0.0021)	(0.0125)	(0.0051)
Observations	935	935	935	935	935	935
Log-likelihood	-1266	-1266	-1266	-1266	-1266	-1266
Prob.>chi^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo-R2	0.0661	0.0661	0.0661	0.0661	0.0661	0.0661
Controls	No	No	No	No	No	No

Threshold

μ_1 =0.1573(0.3801); μ_2=1.7902***(0.3817); μ_3=3.0612***(0.3928); μ_4 =5.7503***(0.4265)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

4.2 Controlling for individual characteristics of WTP

Since there is a great deal of empirical evidence in the literature that individual-level socio-economic and demographic characteristics do a good job in predicting people's WTP for the environment, we control for these variables to see if the resulting evidence on social capital will deviate from the baseline. It would afford us the opportunity to check how sensitive the results are to inclusion of other covariates. Similar to the preceding baseline analysis, we again consider the same willingness to contribute measures (i.e. taxes and prices). The two results are shown in Tables 4 and 5, respectively. With the exception of an individual who made financial donation to an environmental organization where none of the responses are significant in predicting WTP higher environmental taxes and waste recycling behaviour (which recorded significant marginal effects), the main results of interest (i.e. social capital variables) remain as it was in the baseline scenario. Individual membership in environmental organizations and who are 'fairly willing' to pay higher environmental taxes have a lower probability (12.2%) compared to the baseline (14.6%). The remaining

results are qualitatively and quantitatively similar as the baseline case.

Regarding the control variables, we find that respondents who made the declaration of Green Party affiliation in Sweden are more willing to pay higher environmental taxes for environmental protection than those who belong to other political parties. This result is corroborated in the literature (Ivanova and Tranter 2004; Kollmann *et al.*, 2012). Green party affiliates who are 'fairly willing' to pay higher environmental taxes increases such probability by about 9%. This means that for Sweden, introduction of environmental taxes and the consequent decision by individuals to pay those taxes is strongly influenced by partisan considerations. Ivanova and Tranter (2004) found in the case of Australia that the Greens were about 'seven times as likely to pay more taxes for the environment'. Environmental concern among the public is also a significant predictor of the probability to pay higher environmental taxes (see Gelissen 2007; Meyer and Liebe 2010). The lower the level of interest/concern for environmental issues, the lower the probability individuals will accept to pay any proposed increment in environmental taxes. Related to environmental concern, we find that individuals who believe that environmental problems directly affect them are more inclined to accept proposed higher taxes to prevent environmental damage. Expectedly, the higher the level of education, the higher the probability individuals would be willing to pay more taxes for environmental quality improvement. Similar results have been obtained in many studies where higher education was found to induce people's willingness to make financial and other contributions for the environment (Ivanova and Tranter 2004; Gelissen 2007; Meyer and Liebe 2010; Kollmann *et al.*, 2012; Franzen and Vogl 2013; Macias and Williams 2014). The poor and rich relative to poorest individuals are more willing to make significant tax payments toward environmental sustainability. Covariates such as gender, age (and its squared), marital status and individual' household size play no significant role in the decision to pay higher environmental taxes in Sweden.

We again find robust results for willingness to accept cuts in standard of living (Table 4 compared with baseline in Table 2) after controlling for similar range of covariates. It is however instructive to note that membership in environmental organizations loses its statistical significance in the presence of the socio-demographic controls. Nonetheless, we find similar results regarding generalized trust, civic participation (monetary donation toward an environmental cause), and compliance with social norms (same significant factors as the baseline). Again, trust in the national government does not influence in any significant way the urge to accept adjustment to people's present living conditions to save the environment. Among the controls, only Green party affiliation, environmental concern and knowledge, age, household size and income remain significant predictors of individuals' willingness to contribute towards the environment.

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Table 3. WTP higher environmental taxes and effect of social capital

Variables	ologit coeff.	Very unwilling	Fairly unwilling	Indifferent	Fairly willing	Very willing
		WTP: Pay higher taxes				
		Marginal Effects				
Social trust						
Generalized trust	0.0679	-0.0093	-0.0047	0.0033	0.0089	0.0018
	(0.1611)	(0.0133)	(0.0072)	(0.0047)	(0.0131)	(0.0027)
Institutional trust						
Trust in the government	0.5318***	-0.0640***	-0.0452***	0.0189***	0.0733***	0.0170***
	(0.1449)	(0.0095)	(0.0088)	(0.0025)	(0.0129)	(0.0040)
Civic participation & social networks						
Member of an environmental organization	0.8632**	-0.0945***	-0.0802***	0.0212***	0.1215***	0.0320**
	(0.3715)	(0.0190)	(0.0252)	(0.0031)	(0.0329)	(0.0126)
Donated money to an environmental organization in last 5 years	0.1330	-0.0178	-0.0096	0.0063	0.0176	0.0036
	(0.1740)	(0.0139)	(0.0082)	(0.0047)	(0.0144)	(0.0031)
Taken part in an environmental protest in last 5 years	0.4550	-0.0560**	-0.0377*	0.0173***	0.0623*	0.0141
	(0.3803)	(0.0254)	(0.0226)	(0.0059)	(0.0335)	(0.0089)
Compliance with social norms						
Sort waste for recycling	0.1550	-0.0215**	-0.0103**	0.0078**	0.0201**	0.0040*
	(0.1243)	(0.0107)	(0.0051)	(0.0039)	(0.0098)	(0.0020)
Purchase chemical-free fruits and vegetables	0.0633	-0.0088	-0.0042	0.0032	0.0082	0.0016
	(0.1104)	(0.0095)	(0.0046)	(0.0035)	(0.0088)	(0.0017)
Cut back on driving	0.2826**	-0.0392***	-0.0187***	0.0141***	0.0365***	0.0072***
	(0.1131)	(0.0097)	(0.0045)	(0.0035)	(0.0089)	(0.0020)
Reduce household energy use	-0.0189	0.0026	0.0013	-0.0010	-0.0024	-0.0005
	(0.1030)	(0.0088)	(0.0042)	(0.0032)	(0.0082)	(0.0016)
Avoid buying non-green products	0.4319***	-0.0598***	-0.0282***	0.0213***	0.0556***	0.0112***
	(0.1290)	(0.0108)	(0.0053)	(0.0037)	(0.0100)	(0.0027)
Political party affiliation						
Green party	0.6595**	-0.0766***	-0.0583***	0.0207***	0.0918***	0.0223***
	(0.2639)	(0.0157)	(0.0172)	(0.0030)	(0.0238)	(0.0073)
Environmental concern & knowledge						
Concerned about environmental issues	0.6467***	-0.0754***	-0.0570***	0.0206***	0.0900***	0.0218***
	(0.1517)	(0.0093)	(0.0096)	(0.0023)	(0.0135)	(0.0049)
Environmental problems directly affect everyday life	0.4097**	-0.0510***	-0.0334***	0.0161***	0.0558***	0.0124***
	(0.1775)	(0.0121)	(0.0102)	(0.0032)	(0.0154)	(0.0042)
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	723	723	723	723	723	723
Log-likelihood	-959.7	-959.7	-959.7	-959.7	-959.7	-959.7
Prob.>chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo-R2	0.0870	0.0870	0.0870	0.0870	0.0870	0.0870

Threshold

μ_1 =1.1905(1.0361); μ_2 =2.9496***(1.0471); μ_3 =4.2189***(1.0622); μ_4 =6.9970***(1.0695)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

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Table 4. WTP cut standard of living and effect of social capital

Variables	ologit coeff.	WTP: Cut in standard of living Marginal Effects				
		Very unwilling	Fairly unwilling	Indifferent	Fairly willing	Very willing
Social trust						
Generalized trust	0.4217**	-0.0239***	-0.0471***	-0.0108***	0.0559***	0.0259***
	(0.1652)	(0.0051)	(0.0113)	(0.0041)	(0.0128)	(0.0074)
Institutional trust						
Trust in the government	0.1250	-0.0079	-0.0140	-0.0021	0.0171	0.0069
	(0.1499)	(0.0057)	(0.0103)	(0.0019)	(0.0125)	(0.0053)
Civic participation & social networks						
Member of an environmental organization	0.2631	-0.0158	-0.0295	-0.0055	0.0355	0.0153
	(0.2880)	(0.0097)	(0.0200)	(0.0051)	(0.0235)	(0.0113)
Donated money to an environmental	0.5093***	-0.0280***	-0.0567***	-0.0144***	0.0668***	0.0322***
organization in last 5 years	(0.1810)	(0.0054)	(0.0121)	(0.0048)	(0.0135)	(0.0086)
Taken part in an environmental protest in	0.4047	-0.0231	-0.0453	-0.0102	0.0538	0.0247
last 5 years	(0.4967)	(0.0148)	(0.0340)	(0.0115)	(0.0390)	(0.0212)
Compliance with social norms						
Sort waste for recycling	0.0898	-0.0059	-0.0100	-0.0011	0.0124	0.0048
	(0.1229)	(0.0051)	(0.0084)	(0.0010)	(0.0104)	(0.0041)
Purchase chemical-free fruits and vegetables	0.0228	-0.0015	-0.0026	-0.0003	0.0031	0.0012
	(0.1136)	(0.0046)	(0.0078)	(0.0009)	(0.0097)	(0.0037)
Cut back on driving	0.3154***	-0.0210***	-0.0350***	-0.0040***	0.0431***	0.0168***
	(0.1154)	(0.0050)	(0.0077)	(0.0013)	(0.0096)	(0.0039)
Reduce household energy use	0.2892***	-0.0192***	-0.0321***	-0.0036***	0.0396***	0.0154***
	(0.1022)	(0.0044)	(0.0068)	(0.0013)	(0.0083)	(0.0036)
Avoid buying non-green products	0.2791**	-0.0186***	-0.0310***	-0.0035***	0.0382***	0.0149***
	(0.1266)	(0.0053)	(0.0086)	(0.0013)	(0.0105)	(0.0043)
Political party affiliation						
Green party	0.6269**	-0.0329***	-0.0693***	-0.0198**	0.0807***	0.0413***
	(0.2550)	(0.0069)	(0.0169)	(0.0078)	(0.0187)	(0.0125)
Environmental concern & knowledge						
Concerned about environmental issues	0.6897***	-0.0354***	-0.0758***	-0.0230***	0.0878***	0.0464***
	(0.1629)	(0.0045)	(0.0105)	(0.0055)	(0.0111)	(0.0089)
Environmental problems directly affect	0.7111***	-0.0362***	-0.0781***	-0.0241***	0.0902***	0.0482***
everyday life	(0.1848)	(0.0052)	(0.0118)	(0.0061)	(0.0125)	(0.0103)
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	719	719	719	719	719	719
Log-likelihood	-912.5	-912.5	-912.5	-912.5	-912.5	-912.5
Prob.>chi^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo-R^2	0.115	0.115	0.115	0.115	0.115	0.115

Threshold

$\mu_1 = 2.3833^{**}(1.0751)$; $\mu_2 = 4.3787^{***}(1.0917)$; $\mu_3 = 5.6779^{***}(1.1065)$; $\mu_4 = 8.6084^{***}(1.1330)$

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

4.3 Further sensitivity analysis

We test for the robustness of our findings with a different indicator of WTP for the environment. Here, we use the WTP higher prices of goods in order to protect the environment. The results are presented in the appendix to this paper (Tables A2 and A3 – i.e. with and without socio-demographic controls, respectively). We find, similar to some of our earlier results that social capital plays a key role in driving people's WTP

for environmental protection in Sweden. These results seem quite robust across various specifications. In particular, we establish that trust in the government, environmental group membership among other civic participation; and certain components of social norms compliance (food purchasing behaviour, substituting personal car driving to other environmentally forms such as cycling and/or public transportation, green products purchases) are significant positive drivers of WTP for the environment. Trust in the government by far imposes the strongest impact with a probability of 15.5%.

5. Conclusion

The main aim of this paper is to explore whether various elements of social capital influence individuals' decision to contribute either financially or through standard of living cuts in order to preserve the environment. Using the latest survey data from the International Social Survey Programme (ISSP) on the environment and focusing on Sweden as a case study, we show congruent with what obtains in the growing environment-social capital literature (see Jones et *al.*, 2009 for European countries' evidence) that social capital, represented by its individual elements is a significant influence on individuals' willingness to pay for the environment. These results hold and are quite robust to the measure used to represent WTP and standard controls. This has important implication for current and future environmental policies in Sweden at the municipality, county and national levels. The evidence that generalized trust, trust in the government and environmental group membership are strongly associated with WTP for the environment provides yet another channel through which environmental sustainability by way of collective action (efficient and effective natural resource management) could be achieved at a lower 'information' cost.

It thus follow from the results that the success or otherwise of environmental regulation in Sweden depends to a significant degree not only on standard determinants (such as income and other demographic characteristics) of people's subjective (monetary) valuation of the environment, but on building higher stocks of social and institutional trust, incentivising individuals toward compliance of social norms and encouraging active civic engagement. To this end, policies should continue to promote and support formation of groups at various levels of the social strata to enhance social interaction, build more trust and generate information flow with the view to further engendering pro-environmental behaviour and long-term environmental sustainability. Further, a top-bottom approach to environmental governance where government and for that matter environmental managers ensure transparency in relation to making all relevant information available to the populace to make informed decisions concerning issues of the environment would improve trust, a critical conduit (that promotes cooperation and hence compliance) for successful implementation of environmental policies.

Notwithstanding the interesting insights from this paper, there remain outstanding aspects which could be considered in future studies. It will be interesting to investigate institutional trust as it relates to actual environmental state institutions (e.g. the Swedish Environmental Protection Agency or environmental departments/units within municipality and country administration boards) in order to correctly gauge citizens' level of trust towards their work and how that would affect their decision to support policies and programmes that inures to the benefit of the environment. Finally, since the ISSP survey did not ask about actual monetary valuation questions, further studies in this regard and its relationship with social capital is worth considering.

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Table A1: Descriptive statistics

Variables	Mean	Std. Dev.	Min.	Max.	Obs
WTP higher prices	2.791	1.103	1	5	1,138
WTP higher taxes	2.537	1.120	1	5	1,142
WTP for standard of living adjustment	3.068	1.111	1	5	1,142
Generalized trust	0.252	0.435	0	1	1,169
Trust in the government	0.388	0.487	0	1	1,140
Member of an environmental group	0.0538	0.226	0	1	1,172
Donated money to an environmental organization in last 5 years	0.226	0.419	0	1	1,162
Taken part in an environmental protest in last 5 years	0.0292	0.169	0	1	1,163
Sort waste for recycling	3.512	0.702	1	4	1,161
Purchase chemical-free fruits and vegetables	2.277	0.787	1	4	1,156
Cut back on driving	1.855	0.802	1	4	1,030
Reduce household energy consumption	2.376	0.855	1	4	1,172
Avoid buying non-green products	2.135	0.736	0	4	1,174
Green party affiliation (Affiliated=1)	0.0957	0.294	0	1	1,097
Environmental concern	0.471	0.499	0	1	1,169
Environmental problems directly affect individual's everyday life	0.240	0.427	0	1	1,084
Sex (Male=1)	0.531	0.499	0	1	1,181
Age (in years)	49.04	16.47	18	79	1,181
Age squared	2,677	1,601	324	6,241	1,181
Education (i.e. years of schooling)	19.09	22.23	2	96	1,152
Marital status (Married=1)	0.545	0.498	0	1	1,149
Individual's household size	2.623	1.336	1	9	1,145
Income quintile (5 quintiles)	2.924	1.392	1	5	973

Table A2. WTP higher prices and effect of social capital

Variables	ologit coeff.	Very unwilling	Fairly unwilling	Indifferent	Fairly willing	Very willing
		WTP: Pay higher prices				
		Marginal Effects				
Social trust						
Generalized trust	-0.0761	0.0082	0.0080	-0.0021	-0.0114	-0.0027
	(0.1451)	(0.0129)	(0.0120)	(0.0035)	(0.0174)	(0.0040)
Institutional trust						
Trust in the government	0.3767***	-0.0348***	-0.0429***	0.0040**	0.0578***	0.0160***
	(0.1251)	(0.0086)	(0.0119)	(0.0016)	(0.0155)	(0.0053)
Civic participation & social networks						
Member of an environmental organization	1.1541***	-0.0821***	-0.1347***	-0.0212	0.1701***	0.0678***
	(0.3454)	(0.0132)	(0.0310)	(0.0158)	(0.0347)	(0.0249)
Donated money to an environmental org.	0.2631	-0.0253**	-0.0295*	0.0039***	0.0402**	0.0107*
	(0.1608)	(0.0115)	(0.0151)	(0.0012)	(0.0200)	(0.0060)
Taken part in an environmental protest	0.2631	-0.0253	-0.0295	0.0039**	0.0402	0.0107
	(0.3366)	(0.0239)	(0.0318)	(0.0018)	(0.0422)	(0.0121)
Compliance with social norms						
Sort waste for recycling	0.0066	-0.0007	-0.0007	0.0002	0.0010	0.0002
	(0.1060)	(0.0090)	(0.0091)	(0.0021)	(0.0129)	(0.0031)
Purchase chemical-free fruits and vegetables	0.3039***	-0.0319***	-0.0320***	0.0073***	0.0455***	0.0111***
	(0.0991)	(0.0084)	(0.0083)	(0.0021)	(0.0118)	(0.0032)
Cut back on driving	0.2943***	-0.0309***	-0.0310***	0.0071***	0.0440***	0.0108***
	(0.0917)	(0.0079)	(0.0077)	(0.0021)	(0.0109)	(0.0030)
Reduce household energy use	0.0801	-0.0084	-0.0085	0.0020	0.0120	0.0029
	(0.0887)	(0.0075)	(0.0076)	(0.0018)	(0.0108)	(0.0026)
Avoid buying non-green products	0.5835***	-0.0617***	-0.0594***	0.0134***	0.0858***	0.0219***
	(0.1133)	(0.0103)	(0.0084)	(0.0029)	(0.0122)	(0.0046)
Observations	935	935	935	935	935	935
Log-likelihood	-1263	-1263	-1263	-1263	-1263	-1263
Prob.>chi^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo-R2	0.0715	0.0715	0.0715	0.0715	0.0715	0.0715
Controls	No	No	No	No	No	No

Threshold

$\mu_1 = 0.7982^{**}(0.3990)$; $\mu_2 = 2.6478^{***}(0.4117)$; $\mu_3 = 3.8145^{***}(0.4242)$; $\mu_4 = 6.5445^{***}(0.4580)$

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A3. WTP higher prices and effect of social capital

Variables	ologit coeff.	WTP: Pay higher prices				
		Marginal Effects				
		Very unwilling	Fairly unwilling	Indifferent	Fairly willing	Very willing
Social trust						
Generalized trust	-0.1567	0.0155	0.0156	-0.0037	-0.0227	-0.0048
	(0.1694)	(0.0109)	(0.0100)	(0.0030)	(0.0149)	(0.0030)
Institutional trust						
Trust in the government	0.3370**	-0.0284***	-0.0370***	0.0029***	0.0498***	0.0127***
	(0.1530)	(0.0074)	(0.0108)	(0.0010)	(0.0141)	(0.0041)
Civic participation & social networks						
Member of an environmental organization	1.0879**	-0.0714***	-0.1239***	-0.0156	0.1554***	0.0555***
	(0.4302)	(0.0117)	(0.0295)	(0.0121)	(0.0325)	(0.0205)
Donated money to an environmental organization in last 5 years	0.0224	-0.0021	-0.0023	0.0004	0.0033	0.0007
	(0.1880)	(0.0108)	(0.0121)	(0.0020)	(0.0170)	(0.0039)
Taken part in an environmental protest in last 5 years	0.3252	-0.0275*	-0.0356	0.0030***	0.0481	0.0122
	(0.3297)	(0.0154)	(0.0234)	(0.0010)	(0.0305)	(0.0085)
Compliance with social norms						
Sort waste for recycling	0.0713	-0.0067	-0.0074	0.0013	0.0104	0.0023
	(0.1223)	(0.0071)	(0.0078)	(0.0014)	(0.0110)	(0.0025)
Purchase chemical-free fruits and vegetables	0.3531***	-0.0334***	-0.0361***	0.0065***	0.0512***	0.0117***
	(0.1180)	(0.0070)	(0.0073)	(0.0016)	(0.0104)	(0.0026)
Cut back on driving	0.2619**	-0.0247***	-0.0269***	0.0049***	0.0381***	0.0086***
	(0.1095)	(0.0065)	(0.0069)	(0.0015)	(0.0097)	(0.0024)
Reduce household energy use	-0.0380	0.0036	0.0039	-0.0007	-0.0055	-0.0012
	(0.1075)	(0.0062)	(0.0069)	(0.0013)	(0.0097)	(0.0022)
Avoid buying non-green products	0.5022***	-0.0476***	-0.0506***	0.0090***	0.0723***	0.0168***
	(0.1367)	(0.0084)	(0.0079)	(0.0020)	(0.0113)	(0.0036)
Political party affiliation						
Green party	0.4939*	-0.0395***	-0.0552***	0.0019	0.0730***	0.0198**
	(0.2801)	(0.0118)	(0.0202)	(0.0023)	(0.0253)	(0.0085)
Environmental concern & knowledge						
Concerned about environmental issues	0.7958***	-0.0576***	-0.0905***	-0.0044	0.1164***	0.0361***
	(0.1568)	(0.0058)	(0.0111)	(0.0038)	(0.0133)	(0.0067)
Environmental problems directly affect everyday life	0.3310*	-0.0280***	-0.0363***	0.0030***	0.0489***	0.0124**
	(0.1867)	(0.0088)	(0.0131)	(0.0010)	(0.0169)	(0.0051)
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	720	720	720	720	720	720
Log-likelihood	-927.4	-927.4	-927.4	-927.4	-927.4	-927.4
Prob.>chi²	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Pseudo-R2	0.103	0.103	0.103	0.103	0.103	0.103

Threshold

μ_1 =-0.2894(1.0070); μ_2 =21.7304*(1.0113); μ_3 =32.9251***(1.0217); μ_4 =5.9788***(1.0571)

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1