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Willingness to pay for drinking water quality improvement and the influence of social capital

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ABSTRACT

Several factors have been identified as determinants of willingness to pay (WTP), including socio-economic and environmental elements. The present article aims to investigate the influence of individual social capital on willingness to pay for environmental goods. In particular, through an empirical study, a multi-dimensional measurement of social capital is conducted and its influence on WTP for water quality improvement is explored. According to the results of the survey it is observed that social capital is a significant explanatory parameter of WTP.

1. Introduction

In the literature of environmental economics several factors have been identified affecting the tendency of individuals to contribute money for the environment (see Mitchell and Carson, 1989; Spash, 2006; Nielsen et al., 2003; Kayaga et al., 2003). These include both socio-economic factors and other parameters connected with environmental behavior (e.g. pro-environmental attitudes). The present article focuses on the influence of social factors and in particular social capital, on willingness to pay (WTP) of individuals for the improvement of drinking water quality.

Theoretical and empirical studies regarding social capital have significantly increased in the past decades and the concept has been successfully introduced to environmental policy and management literature. In particular, social capital has been connected to community environmental management, effectiveness of environmental policies and environmental behavior of individuals, with the majority of studies emphasizing its positive influences (Pretty, 2003; Pretty and Ward, 2001; Dev et al., 2003; Cramb, 2005; Jones, 2010). Consequently, it is also interesting to investigate the influence of social capital, as an individual characteristic, on willingness to pay for environmental improvements.

Few studies have been presented in the literature connecting social capital with willingness to pay (e.g. Jones et al., 2009, 2010; Zhang et al., 2006). In this context the present article aims to examine the influence of several social capital parameters on willingness to pay of individuals through a contingent valuation survey (Mitchell and Carson, 1989). The environmental good being valued is the improvement of tap water quality in an insular community of North Aegean Sea in Greece. In particular, through the study three main issues are investigated. Firstly, monetary valuation for the improvement of tap water quality according to citizens' preferences. Secondly, the influence of social capital and other socio-economic factors on willingness to pay of individuals; and finally, the connection of social capital with zero and more specifically protest responses.

The article is divided in four sections. In the next section a brief review is provided regarding the concept of social capital, followed by a theoretical analysis concerning the influence of social capital parameters on willingness to pay for public goods. In the third part, the methodology of the survey is described analyzing the research area, the questionnaire of the survey, data analysis techniques and characteristics of the sample. In the fourth part, the results of the study are presented and in the final section of the article the main conclusions of the paper are highlighted and discussed.

2. Social capital and its connection to WTP

Although no widely accepted definition of social capital exists, the concept has been successfully connected to numerous issues, such as development and economic growth (Sabatini, 2009; Dinda, 2008; Crudeli, 2006; Chou, 2006), health (e.g. Rostila, 2007) and

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environmental management and policy (Dev et al., 2003; Cramb, 2005; Pretty, 2003, 2007). Several components have been identified as indicators of social capital (see Coleman, 1990; Putnam et al., 1993; Putnam, 2000; van Oorschot et al., 2006; Sabatini, 2009), including both cognitive and structural elements (Uphoff, 1998). In the present article four components of social capital will be emphasized due to their connection with WTP issues. Firstly, social trust concerning trust towards people in general or to specific social groups (Uslaner and Conley, 2003). Secondly, institutional trust, referring to trust in institutions functioning in a community (e.g. Government, Local authorities, NGOs) (e.g. Paxton, 1999). Thirdly, social networks and civic participation, relating to the involvement of individuals in formal and informal networks and also their interest for collective issues of their community (Putnam, 2000). Finally, compliance with social norms, hence the tendency of individuals to comply with formal or informal community rules aiming to the protection of the common good (van Oorschot et al., 2006). Consequently, in the present analysis social capital is defined as a multi-dimensional concept consisting of all of the above elements.

In order to present a detailed framework explaining the connection of social capital with WTP, the influence of each social capital component will be presented separately. Social trust is regarded as one of the most important components of social capital with significant influence on social norms and social networks. Regarding its connection to environmental preferences, social trust influences individuals' behavior due to their perception that other members of their community will act in a similar manner aiming on the protection of the common good (Pretty, 2003). Similarly, individual WTP is influenced from the expectation of others people intention to contribute money (Wiser, 2007).

Institutional trust is also expected to significantly affect willingness to pay. In case of public goods, trust in institutions (e.g. the state) is important due to their involvement in environmental management. Thus, the tendency of individuals to trust these institutions is connected with the perception for the efficiency of environmental management (Kim, 2005; Beierle and Cayford, 2002). In WTP studies, trust in the actor providing or managing the good being valued determines the level of monetary valuation and acceptance of the hypothetical scenario (Krystallis and Chryssohoidis, 2005; Donahue and Miller, 2006; Johnston et al., 1999). This assumption has also been presented in the literature concerning refusals to pay and in particular protest responses. In these cases, distrust towards the management actor, is regarded as one of the main reasons for citizens' protests and reluctance to pay (Jones et al., 2008a; Yoo et al., 2001; Whitehead and Cherry, 2007).

Concerning social norms, these are strongly linked to social trust and are also associated to WTP issues (Spash et al., 2009; Meyerhoff and Liebe, 2006; Blamey, 1998). The general tendency that has been developed in a community to act for the protection of the common good is expected to influence the decision of individuals to comply with social norms (Pretty, 2003). On the contrary, incidents of non-compliance may imply antisocial behavior (e.g. free-riders) with significant social costs (Corral-Verdugo and Frias-Armenta, 2006). Thus, the existence of strong social norms is linked to the tendency of individuals to protect the interests of their community and consequently their intention to contribute money for environmental protection and improvement.

Apart from the cognitive factors of social capital, structural elements have also been identified (Coleman, 1990; Putnam, 2000). These refer to social networks and civic participation. Although no links have been found between structural elements and WTP, there is a theoretical connection concerning WTP for environmental goods. In particular, participation in collective activities is strongly associated with the level of awareness for environmental issues and the tendency to participate in actions for their resolution (Jones, 2010; Wakefield et al., 2006). Consequently, it may be assumed that citizens who are more interested in collective issues are also expected to be more willing to pay for public goods.

3. Methodology of the survey

3.1. Aim of the survey

Based on the above theoretical assumptions, a survey using the Contingent Valuation Method (CVM) was conducted in the city of Mytilene, in Greece. The study aimed to investigate WTP for the improvement of tap water quality and the influence of social capital parameters on citizens' decision. Through the survey the effect of social capital on the tendency to pay and the actual monetary valuation were examined.

3.2. Research area

The research area was the city of Mytilene, which is the capital of Lesvos Island situated in North Aegean Sea, in Greece. The approximate population of the area is 29,000 inhabitants. This particular area was selected due to the presence of significant problems regarding the quality of drinking water. Although no incidents of poisoning and sickness have been presented, there is a belief among several citizens that tap water should not be consumed, at least not on a daily basis. As a result, a high percentage of citizens purchase and consume bottled water instead of tap water. Furthermore, similar to other Greek islands (e.g. Genius et al., 2008), Mytilene faces problems of water shortage during the summer. In order to confront this problem the majority of households concentrate water in tanks situated in the roofs of houses; a practice which may lead to significant reduction of the drinking water quality.

3.3. Questionnaire of the survey

In order to investigate WTP and social capital, a questionnaire was created and distributed to a sample of the population as part of a larger research project. The format of the questionnaire was finalized after the completion of a pre-survey to a non-representative sample of the population.

3.3.1. Environmental behavior and demographic data

An initial part of the questionnaire explored environmental practices including the frequency of individuals to drink tap water measured in a 4-scale question (never, sometimes, most times, always). In addition, demographic data were recorded concerning gender, age, education and income level.

3.3.2. Social capital questions

A second part of the questionnaire included questions relating to the measurement of social capital. Several measurement techniques and social capital indicators have been proposed in relevant literature (e.g. Sabatini, 2009; Grootaert and van Bastelaer, 2002; Narayan and Cassidy, 2001). In the survey questionnaire four categories of questions were utilized, commonly used in social capital measurement studies.

Social trust was estimated through three questions examining both generalized and particularized trust (Narayan and Cassidy, 2001; Uslaner and Conley, 2003) ('*Most people can be trusted or you can't be too careful*'. '*Most people are fair or try to take advantage of you*' and '*Do you trust your neighbors*'). All questions were measured on a 0–10 Likert scale, where 0 represented the lowest level of trust and 10 the highest.

Institutional trust was examined in relation to the good being valued. Thus, trust in three institutions was measured, directly connected to water management: the Government, the Ministry of Environment and the Municipality (see Paxton, 1999; van Oorschot