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Determinants of willingness to pay for coastal zone quality improvement

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ABSTRACT

Individuals' decision to use a particular coastal beach is influenced by their preferences and perceptions as well as site's characteristics. This study examines visitors' attributes and desired site specific characteristics in order to determine the factors affecting willingness to pay (WTP) for an improvement quality (environment, water as well as recreation activities) program. A contingent valuation survey was carried out in order to evaluate the economic benefits of improving coastal zone quality. The study area was coastal line of an area in Central Greece (Volos) where some beaches failures to meet the standards of the Blue Flag program. Our empirical findings suggest that the major variables affecting respondents' willingness to pay were related to previous environmental behavior. The previous respondents' participation in environmental protection programs by paying an amount was the most important determinate parameter for their WTP. Income, age, gender, coastal recreational activities and environmental quality of the site plays an important role to people's WTP for quality improvement of coastal zone.

1. Introduction

Coastal zones are unique ecosystems different from the oceanic or terrestrial and they are attractive and important areas for socio-economic development. Costal ecosystems support life on our planet and affect the present and future well being of human societies. They also deliver a series of goods and services that are of benefit to humans, including opportunities for recreation. People do not only use the coast like aquaculture but also enjoy it like coastal recreation and coastal zones are traditional hotspots for tourism and leisure activities (Jennings, 2004).

Coastlines worldwide receive millions of visits every year for recreational activities such as swimming, surfing, wildlife viewing, beach-going etc. Sometimes the demand for coastal recreation can outstrip the capacity of the area and the impacts of recreation on natural conservation can create short (or long) term damage (Goodhead and Johnson, 1996). Recreation is an important component of social well-being (Driver et al., 1991). Coastal tourism and recreation have rapidly increased over the past decades becoming a primary contributor to the Gross Domestic Product (GDP) of several countries attracting tourists who spend money in the local economy.

Forty percent of the world population lives within 100 km of the coast, thus representing a pressure on coastal resources (Carter, 2002). Increased population growth and the shift of population to the coastline have created an increasing pressure on coastal assets all over the world. People's decision for costal recreation is affected by environmental status of coastal zone. The demand for recreation activities is influenced by site characteristics and individuals' preferences (Parsons et al., 2000; Roca et al., 2009).

According to Paudel et al. (2011) sites' environmental characteristics are important factors in the decision-making process of campers and swimmers for choosing a recreation site. At the same time these characteristics may be more important than availability for swimming as an activity of a recreational trip. In this way a change of the environmental status of the sea resulting in a changed provision of recreation services will therefore affect wellbeing and profits. Moreover apart from the natural features recreational services offer, they also influence beach users' demands and they are a significant reason for choosing a particular beach (Roca et al., 2009). Thus if we want to increase the benefits (recreation value) of a coast we must improve the quality of environmental status and recreation services.

Recently the attention within the European Union has been focussing on the costs and benefits of improving coastal water quality mainly because of the high cost of failure for many waters to reach the quality standards (Langford et al., 2000; Hanley et al., 2002). In this paper, we carry out a contingent valuation survey in order to estimate the economic benefits of improvements to coastal quality of beaches in Volos (located in Central Greece). Some beaches at Volos coastal line fail to meet the standards of the Blue Flag program. The Blue Flag is an award for coastal destinations which have achieved the highest quality in water, facilities, safety, environmental behavior (environmental education) and management which are the main criteria of the program.

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Specifically, the objective is to identify the socio-demographic determinants that affect beach users' perceptions in order to generate relevant information for coastal managers. Beach recreation is an important contributor to welfare in Volos for both local and tourist populations. There are now a great number of visits to the beaches of Volos every year. This increase in recreation demand for Volos' coastal zone is accompanied with environmental quality degradation from land and industrial based activities (Voutsinou-Taliadouri and Balopoulos, 1989). This situation exacerbates the existing coastal environment degradation problems. For this reason we explore beach users' perceptions and attitudes towards beach quality.

Our empirical results would help the choice of management strategies for coastal zone management and may help the design of incentive schemes for making conservation policy both effective and efficient. Moreover it is desirable that such decisions are based on a sound understanding of how people value coastal zones.

The structure of the paper is as follows. Section 2 discusses the survey methods adopted. Section 3 presents the background to the problem Section 4 presents the existing relative research efforts and the proposed econometric methods as well as the empirical results derived, while Section 5 comments on the empirical findings. The last section concludes the paper.

2. Material and methods

A contingent valuation survey was carried out to 300 randomly selected residents of Volos city, who were using beaches along the Pagasitikos Gulf.[1] Volos is a coastal port city in Thessaly situated in the middle of the Greek mainland and is built along the Pagasitikos Gulf. It is the only outlet towards the sea for the prefecture of Thessaly and it is dedicated mainly to sun-and-sea tourism. The 56 km long coast of Volos offers beautiful beaches safe for swimming with high quality of waters.

At present, the Municipality of Volos has nine beaches awarded with blue flags and occupies a high position among Greek mainland cities with "Blue Flag" international awards. On the other hand, Volos' port is the third of Greece's major commercial ports. As a consequence, this may result to heavy human activities on coast and pollution unplanned infrastructures, which sometimes cause major environmental problems to the coastal zones (Michailidou et al., 2003). A multiplicity of human uses and benefits are derived from the Volos' coastal zone and is important to be valued.

Face-to-face interviews were conducted on-site on beaches, with varying degrees of water quality. Respondents were asked to evaluate the morbidity effects of the benefits of actions to improve water quality and restore Blue Flag status. For this reason a survey instrument was developed and tested according to guidelines established by the NOAA panel (Arrow et al., 1993). After designing the first draft of the questionnaire, a pilot survey was conducted, in order to fully adapt the questionnaire at the conditions of the study area and to determine the range of different WTP amounts.

The questionnaire comprised 27 items divided into three sections delivered to respondents in the following order. The introductory part introduced the respondents to the purpose of the study presenting all the necessary background information about the aim of the survey. At the same time it assured the respondents that their answers would be dealt with confidentiality. Next, Section 1 is a general information section where respondents were asked to provide information on their household like socio-economic status, sex, age, educational level, income level, number of dependents etc. In this section of the survey respondents were also asked to give information about general ecological attributes towards the environment.

Before we move to Section 2, it is worth mentioning that previous studies have shown that users' beach decision is unduly influenced by beach awards signals, such as the Blue Flag award. For this reason these awards are widely used to determine the recreational use value of beaches (Nahman and Rigby, 2008; McKenna et al., 2010; Preez et al., 2011). As already mentioned, the WTP section was constructed according to guidelines established by the NOAA panel (Arrow et al., 1993).

In these lines, in Section 2 the background information about blue flags programs was provided together with information on a hypothetical plan for receiving Blue Flag accreditation to five new beaches to elicit values through willingness-to-pay (WTP) questions. The question format was a voter referendum[2] to approve this effort. Respondents were asked, prior to the WTP question, whether they would support a coastal zone improvement program. Implementation of the program would cost them a specified amount of money (in €) in a one-time payment. In the second phase, the WTP was elicited only from people who had answered positively to the first question. This time respondents were asking if they were willing to pay a specific amount of money to confirm their participation.

Specified amounts were randomly assigned to respondents. Bit step amounts were used based on the results obtained in the pretest and in the pilot study and ranged from 5 € to 50 € (bit step 5 €). Given this information, respondents were asked whether they would vote "yes" or "no" to approve this effort. Due to lack of previous valuation articles for the study area, in a pilot study the questionnaire included an open-ended question format aiming to specify the bit step amounts of the final questionnaire's version. The results of the pilot study show that the WTP amounts were fluctuated between 1 and 50 €.

Follow-up questions were asked to determine reasons for respondents' answers. Protest responses were considered those rejecting some features of the hypothetical CV scenario rather than those with no values. As a result in protest, answers like "natural protection is a responsibility of the government", "natural environment protection is already funded by national and regional governments", "natural protection are public good and do not pay for them" "I don't think the protection program would work" and "I am opposed to any new taxes" were included.

In Section 3 respondents were asked to indicate the importance of different reasons for saying yes to the proposed scenario and to express their WTP. Blue Flag status indicates that the beach has complied with water quality, environmental education and information, environmental management and safety criteria (The Blue Flag, 2007). The Blue Flag means that a number of requirements regarding the quality of water, environment and

[1] The sample size was determined using the Cluster Sampling formula. All others sampling methods require sampling frames which demand a list of the enumeration units (Tryfos, 1996). This is not always feasible, possible or even available. As a consequence the entire population is divided into groups, or clusters and a random sample of these clusters is selected (Aaker et al., 2009; Shiver and Borders, 1996). The target population of present survey was recreational visitors of coastal zone and it was not feasible or even possible to have a frame list and cluster sampling was the only technique that we can use. So as cluster units were assumed the coastal beaches and as elementary units were the days during a summer holiday season. All visitors who were visiting the beaches in a random selected unit – days were included in the sample. The size of the sample may be considered sufficient for the performed statistical analysis.

[2] According to NOAA Panel suggestion, CVM surveys should use a referendum approach. Employing this question format, respondents are faced with a particular program and the possibility to pay for its implementation through some means, such as higher taxes (Carson et al., 1998). Referendum format resembled the way people actually make choices regarding public programs (Portney, 1994).