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THE ENVIRONMENTAL CONFLICTS TOWARD ENVIRONMENTAL PRESERVATION

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Abstract

Many empirical studies focus on the value estimation through the use of the Contingent Valuation Method (CVM) that asks the respondent to elicit an amount of willingness to pay (WTP) for the preservation of a specified resource. This study links the environmental perspectives with WTP to investigate the environmental conflicts between two environmental groups. We select the preservation of the Chi-ku Wetland as a case example involving environmental conflicts by surveying two environmental groups. Analysis reveals that respondents with more eco-centric perspectives, and higher income are willing to pay more on the preservation of the specified wetland. One of the environmental groups called Coast Association (CA) aiming to promote eco-tourisms is found to have more anthropocentric perspectives while the other group called Black-faced Spoonbill Conservation Society (BSCS) engaging in wildlife protection tends to be more eco-centric toward the preservation of the specified wetland. More respondents in CA refuse to assess WTP than the respondents in BSCS. Respondents with less eco-centric perspectives in CA tend to refuse a valuation while respondents with more eco-centric perspectives in BSCS are more tending to refuse valuation.

Key words: Contingent valuation method (CVM), Environmental perspectives and Willingness-to-pay.

INTRODUCTION

Basically, wildlife is seen as valuable resources and may produce economic values and existence values. Existence values are a reflection of an individual's psychological attitude toward a specified resource that cannot be evaluated through a market mechanism. A great amount of literature suggests using the Contingent Valuation Method (CVM) that involves a survey through questionnaires about the economic values one is willing to pay or to accept for a change in quantity or quality of a specified resource or a product (Kotchen and Reiling, 2000; Gonzalez and

Leon, 2003; Ellingson and Seidl, 2007; Drayer and Shapiro, 2011) even though there is a fierce debate about the validity and reliability of CVM occurring. (Knetsch, 1997; Hausman, 2012; Kling et al., 2012). Some authors find a strong relationship between environmental beliefs and the elicited amount of existence value for a specified resource (Loomis et al., 1994; Bateman and Langford, 1997). Loomis et al. (1994) attempt to verify the linkage between the psychological value and monetary enumerative through an exploration of the motives behind willingness-to-pay responses. Some studies attempt to investigate the relationship between environmental

attitude and the environment (Spash, 1997; Byrnes et al., 1999; Kotchen and Reiling, 2000; Amador et al., 2013). Stern et al. (1995) examine the relationship between environmental attitudes and WTP for the preservation of tropical forests and confirm the positive relationship.

In this paper we apply CVM to identify the relationship between environmental perspectives and WTP in order to investigate the factors that affect WTP such as incomes and the respondent's attributes, and to examine the causes resulting in refusals to propose valuation. Environmental perspectives are considered as a subjective norm and conceptualized as a moral obligation, reflecting an individual's psychological value on the preservation project. The self-interest, in general, motivates people to enhance their own personal interests at the expense of others. It also may motivate people to transcend selfish concern and concentrate on the public welfares. Ajzen and Fishbein (1980) argue that individuals possess an array of personal values in responding to an external stimulus and may give different ranks or weights on the same objects, because "cognitive processes precede behavioral decisions in which the most salient values are evaluated in terms of their relative importance" (Kotchen, and Reiling, 2000).

This paper uses a case study involving a wetland for endangered species of black-faced spoonbill by surveying two environmental groups so as to investigate the environmental conflicts between them. When the environmental organizations have different environmental perspectives, environmental conflicts may arise from the gap of objective-seeking between pursuing self-interests and attaining environmental ethics. A large body of literature (McKinley & Mone, 1998; Scherer, 1998; Clark and Slocombe, 2011; Dickman, 2010; Peterson et al., 2013) focuses on the issues of environmental conflicts arising from different environmental perspectives in organization studies. The role of environmental perspectives in motivating environmental behavior is very important and can affect collective decision-making in the two environmental groups. The purposes of this paper include:

To evaluate WTP for the preservation of the Chi-ku Wetland and to identify whether a significant gap of WTP exists between two environmental groups with different objectives.

To compare the perspective difference between the two environmental groups leading to the conflicts encountered over the preservation of the particular wetland.

To examine the motives that affect the amount of WTP and the general conflicts between the two environmental groups.

MATERIAL AND METHODS

Background of the case study: The Chi-ku Wetland located in the western coast of Taiwan was selected as a case study of the conflicts between two environmental groups. It has one of the greatest scopes of indigenous wildlife in Taiwan due to its rugged terrain and has become an important habitat for wild birds. This wetland covering about 15 square kilometers also serves as a habitat for about 600 dark-faced spoonbills, corresponding to 60% of this species' total population left in the world. Around this wetland, there are four villages with a total population of more than 12,000 in 2016. Most of villagers depend on fishing in the nearby sea linking with this wetland. To protect their interests, the local fishermen organized an environmental group that is called the "Coastal Association, CA" aiming the eco-tourism. CA proposes that the preservation of this wetland has to serve for the interests of local fishermen.

On the other hand, many other environmental organizations are concerned more about the loss of the native biodiversity and propose to preserve this wetland without any premise. The strategy for the preservation of the wetland is to reduce the size of development and avoid any intervention of human activities including eco-tourism. Their proposal for preservation of this wetland implies a reduction of human disturbance so as to attract more birds to arrive every year.

CA claims that the wetland working as an eco-tourism site may create employment opportunities and provide for broad usage of a wide range of ecosystems. The integration between economic benefits for local fishermen and ecological benefits for black-faced spoonbill could be reached. In addition, CA emphasized that from a legal perspective they have already lived in the village and depended on the wetlands for several decades. Without the wetlands, they cannot survive. The

multi-use proposal presented by CA is the best way to make a compromise. The other environmental groups recognize the need for fishermen's living rights, but they still insist on the single usage of this wetland for wildlife.

To examine the differentials of the environmental conflicts between CA and other local environmental groups, we select the "Black-faced Spoonbill Conservation Society (BSCS) purposely as a representative of the local environmental groups. BSCS was established in 1998 and aimed at the preservation of black-faced spoonbill by providing related information about the conservation of birds and wetlands to the public. They expect to improve the survival rate of the endangered birds through environmental education. Compared to other environmental groups with the same goals, this organization is relatively more active in the promotion of conservation of natural resources.

Research methods: Many empirical studies consider logit models or probit models to identify the parameter estimates (e.g. Kotchen and Reiling, 2000) to analyze the relationship between environmental belief and WTP. Environmental belief can lead to behavioral intentions and actual behaviors (Ajzen and Fishbein, 1980). Willingness-to-pay (WTP) depends on the psychological concept of an individual's environmental perspectives that reflect his/her intrinsic value or psychological value. Respondents tending to be eco-centric are expected to pay more money for the preservation of the specified wetland. Kotchen and Reiling (2000) presented a logit model as the following model specification to explore the relationship among environmental attitudes, non-use values for endangered species, environmental knowledge, and respondents' basic attributes:

Yes/No = f (Bid, NEP, Knowledge, Income),

where Bid is the bidding amount and NEP is environmental attitudes.

In this paper we follow the model presented by Kotchen and Reiling (2000). As some empirical studies find that environmental knowledge does not really affect behavioral intentions or actual behaviors (Chen and Chen, 2001), the variable of environmental knowledge is deleted and the variable of environmental perspectives is employed to replace environmental attitudes. Thus, the following logistic

equation is employed to identify the relationship among the bidding amount of willingness-to-pay Bid, environmental perspective (NEP), and income I.

$$\ln \frac{p}{1-p} = \alpha_0 + \alpha_1 Bid + \alpha_2 NEP + \alpha_3 I \quad (3.1)$$

where p is the proportion of respondents' willingness-to-pay at the specified amount.

The questionnaire includes three parts: (1) identification of environmental perspectives, (2) the estimation of bidding amounts for protection of the wetland, and (3) the respondent's basic attributes.

(1) Environmental perspective: The environmental perspective is represented by a subject norm, which is an important part of an individual's behavioral intentions and their psychological values on a specified resource. The NEP scale developed by Dunlap et al. (1992) is used to measure the human's environmental perspectives toward the wetland. This new NEP scale has been proved to own a property of construct validity and increases in internal consistency as compared to the original scale (Dunlap et al., 1992). It can also provide a reliable way to identify the environmental perspectives. In this paper, a general Likert scale with 5 points is presented to the respondents.

(2) Estimation of bidding amounts: The monetary amount of willingness-to-pay in this study is designed in a closed form at specified dollar amounts. To determine the ranges of specified monetary amounts, we consulted with a group of experts in this field as a pre-test and reviewed a great amount of literature that focus on the same site (e.g. Hsu, 2011; Hsieh, 2014). The bidding amount of WTP is designed to range from NT\$100 to \$2000. Respondents are asked how much he would pay for the preservation of the wetland as an existent state in a one-time payment through a voluntary contribution to a fund related to wildlife preservation.

(3) basic attributes: The questionnaire asks the respondents to provide basic information about their income, gender, education, employment status, and age.

The data for bidding amounts, environmental perspectives and basic attributes is obtained through a survey by mailing the questionnaire to members of the two groups including CA and BSCS. The survey was conducted between August to October, 2016. A

total of 482 questionnaires were mailed to members (345 members in CA and 137 in BSCS) of the two groups respectively according to the member lists provided by the two groups. We received 40 respondents' data with a 11.6% respondent rate from CA and 49 respondents' data with a 35.8% respondent rate from BSCS. In the questionnaire, the map of the Chi-Ku Wetland was attached to specify the detailed designation of the wilderness preservation, in which the location and the specific proposed areas are identified by color pen. In addition, a letter signed by the researchers and the research institute covering a brief description of the study was included with the questionnaire. This letter is offered in order to reduce their pressure and avoid bias.

RESULTS AND DISCUSSIONS

The basic information about the socio-economic/demographical characteristics of respondents in the two groups is described in Table 1. Respondents with an age over 50 in the CA and BSCS groups are 12.5% and 10.2 %, respectively. It is worthwhile to point out that the education level between the two groups is almost the same and they are both characterized with a high education level. The respondents with an education level above college are 42.5% and 65.3% for CA and BSCS, respectively, which is contrary to our expectations. We suppose that an individual with a high education level may be more concerned with environmental preservation. As expected, members in BSCS have higher household incomes.

Table 1. Characteristics of the respondents

		CA (40 respondents)		BSCS (69 respondents)	
gender	Male	22	55.0%	29	59.2%
	female	18	45.0%	20	40.8%
education	Primary	8	20.0%	1	2.0%
	Junior High	5	12.5%	4	8.2%
	Senior High	10	25.0%	12	24.5%
	College	13	32.5%	22	44.9%
	Graduate	4	10.0%	10	20.4%
Household annual income (in NTD1,000)	Below 300	2	5.0%	0	0%
	300~700	12	30.0%	13	26.5%
	700~1,100	19	47.5%	16	32.7%
	1,100~1,500	6	15.0%	15	30.6%
	1,500~1,900	1	2.5%	4	8.2%
	Over 1,900	0	0%	1	2.0%
Age	Below 35	16	40.0	16	32.7
	35~50	19	47.5	28	57.1
	Over 50	5	12.5	5	10.2

An individual's environmental perspectives may be formulated through his/her past working experience, religion beliefs, or moral beliefs. The motives for the two groups' participation in the preservation of the wetland are highly varying (please see Table 2). Most CA members rank "economic values and social benefits" as the most important motives, and "environmental amenity for the current generation" and "environmental amenity for the next generation" as the next. BSCS members emphasize that wildlife

owns the right to live on the wetland and thus the public has to have a high regard for wildlife. If wildlife is absent, then the public may become less happy. BSCS members believe that wildlife animals have their own intrinsic right to exist, as Stone (1974) argues, "There are millions of people in the world who think that animals have a right to exist and be left alone, or at any rate that they should not be persecuted or made extinct as species." In BSCS, ethical motivations related to wildlife and ecosystems

are the major factors to influence environmental perspectives while potential economic values derived from the use of this wetland are the major factors for CA to affect environmental perspective.

Table 2. The reasons for the preservation of the wetland

	% of respondents in CA	% of respondents in BSCS
Environmental amenity for current generation	72.5	63.2
Environmental amenity for future generations	67.5	65.3
Economic values and social benefits	90	20.4
Wildlife’s legal right	40	71.4
The presence of wildlife can increase the public’s happiness	45	83.6

CA presents a legal perspective that they already lived in the village and depended on the wetland for several decades. Therefore, the preservation of the wetland should consider the living rights of the local fishermen. CA shows a multi-use proposal by integrating the protection of wildlife and fishermen through the development of an eco-tour program. BSCS emphasizes in contrast that each created wetland should be preceded by complex and demanding procedures. BSCS recognizes a need for recreational land for the general public, but they emphasize the protection of endangered species cannot be substituted by others.

The estimated logit models for the two environmental groups and the integrated are listed in Table 3 where Integrated represents the regression results for the

total respondents covering the two groups. The coefficients for the environmental perspective and bidding amounts go in the expected direction for the three cases. However, household income has no significant impact on the probability of responses’ WTP. In general, the respondents who voluntarily join the environmental group tends to contribute their efforts to preservation programs. Thus, household income plays little effect on preservation behaviors. The monetary amount of WTP is also significantly related with the probability of WTP for BSCS and Integrated (total respondents) except for CA. This result implies that CA shows a diversification to preserve the wetland while BSCS insists on the preservation program.

Table 3. Logistic regression analysis of environmental perspectives and WTP

	CA	BSCS	Integrated
Observations	24	34	58
Constant	-3.6663 (0.1438)	-3.3571 (0.1713)	-3.8030** (0.0191)
<i>Bid</i>	-0.0005 (0.4828)	-0.0021** (0.0267)	-0.0012** (0.0128)
<i>NEP</i>	0.0231** (0.0133)	0.0411** (0.0188)	0.0317** (0.0167)
<i>I</i>	-8.2E-07 (0.6143)	-4.9E-07 (0.7411)	-2.6E-07 (0.7941)
-2Loglikelihood	27.507	30.448	61.857
Cox & Snell R ²	0.119	0.388	0.260
Nagelkerke R ²	0.166	0.517	0.349

p-value in parenthesis, * significant at $p < 0.1$, ** significant at $p < 0.05$

Theoretically, the calculation of mean WTP is very difficult and requires numerical methods of integration under the logistic functions of Eq. (3.1) between specified upper and lower bounds. Hanemann (1989) argues that the exact measure of equivalent surplus (WTP) is difficult since we do not know the real distribution of WTP which is unobservable in the random utility framework. The mean WTP is calculated based on the formula suggested by Hanemann (1989) for reasonable approximations:

$$E(WTP) = \left(-\frac{1}{\alpha_1}\right) \ln(1 + e^{\alpha_0}),$$

where α_0 is the coefficient for the constant of the regression line in Eq. (3.1) and α_1 is the coefficient for Bid. After calculation, the mean WTP for CA is NT\$529.21 which is relatively higher than the mean WTP of NT\$323.45 for BSCS. This result is contrary to our expectations. The WTP difference between the two groups may be explained by the value conflicts. The total values of an environmental resource can be decomposed into three main components: use values, option values, and existence values (Ahmad et al., 2016). The use values are based on the right of property while existence values recognize that the existence of environmental resources is beneficial to all things. Through interviewing the respondents, we find that CA advocates their members' inherent rights to feed the fish on the wetland and to harvest, while BSCS insists preservation without prerequisites. This result implies that the WTP evaluated by CA includes the use values of the wetland. It should be noted that these estimates for CA might be slightly higher than true WTP, because CA illicit the bidding amount in consideration of the use value provided by

the wetland. Silberman et al. (1992) compare the WTP for the preservation of beach ecosystems between users and non-users of New Jersey beaches and find the mean WTP for a user is about US\$15.1 while the mean WTP for a non-user is about US\$9.26. Their result is similar to that of this paper.

All respondents are categorized into anthropocentrism and eco-centrism based on the measurement of NEP by K-mean cluster analysis. The number for the two categories of environmental perspectives and non-payments are listed in Table 4. It indicates that respondents in CA with a more anthropocentric perspective tend to refuse to participate in a valuation while respondents with a more centric perspective in BSCS express a high objection to value the WTP of the wetland (Please see Fig. 1). The solid line represents the relationship between non-payment and environmental perspectives for CA and the dash line is for BSCS. In CA, 3 of 11 (27.3%) respondents with eco-centric perspectives refuse to value the wetland and 13 of 29 (44.8%) respondents with anthropocentric perspectives refuse to value it. Similarly, 10 of 22 (46.7%) respondents with eco-centric perspectives and 5 of 27 (18.5%) respondents with anthropocentric perspectives yield in BSCS are linked to yield the relationship of non-payment responses and environmental perspectives.

Non-payment responses imply that the value of the specified resource is unable to be calculated and is irrespective to the actual monetary income level. Some people refuse to offer a proposal to exchange for money or other commodities for a loss of environmental resources even though the compensation is very high due to environmental perspective. Humans cannot deprive wild lives of the right to inhabit in wetlands

Table 4. Number of respondents with different environmental perspectives and non-payments

		Eco-centric	Anthropocentric	Total
CA	Payment	8	16	24 (60%)
	Non-payment	3	13	16 (40%)
	Total	11	29	40 (100%)
BSCS	Payment	12	22	34 (65.2%)
	Non-payment	10	5	15 (34.6%)
	Total	22	27	49 (100%)

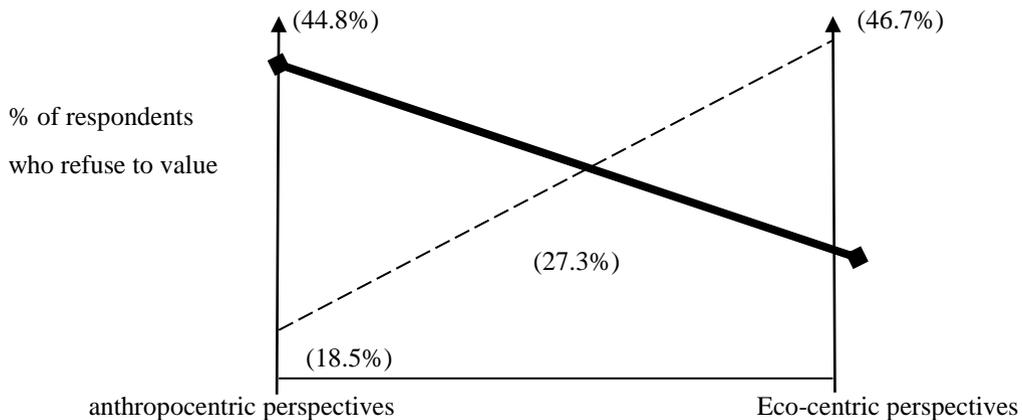


Fig. 1. The number of non-payment (refusal to make a valuation) for different environmental perspectives (solid line for CA and dash line for BSCS)

The empirical study of Spash (1997) finds that individuals with a strong eco-centric environmental perspective will be more likely to refuse participation in WTP or WTA procedures. The responsive behavior of BSCS coincides with Spash (1997), but the results of analysis on refusal behaviors from CA suggest an opposite effect: respondents with more eco-centric perspectives tend to refuse a valuation of the wetlands less.

CONCLUSIONS

This study compares the differences of environmental perspectives, WTP and basic attributes for two environmental groups. The major findings of the regression result conclude that (1) those with stronger eco-centric perspectives are more willing to provide an economic contribution to improve the environmental status and give higher values of the natural environment in both groups, (2) more respondents with eco-centric perspectives in BSCS refuse to participate in a valuation while more respondents with anthropocentric perspectives in CA refuse to value the preservation of the Chi-ku Wetland, and (3) the mean WTP evaluated by CA is higher than by CSBS. The results of this paper shed light on some implications for psychological values that are derived from an individual's environmental awareness on a particular environmental resource. The estimates in this paper provide some new concepts from empirical cases relating with

developing countries into the valuation of environmental goods assessed by environmental groups with a variety of organizational objectives. The paper also illustrates the strong impacts of environmental perspectives, and household incomes on the participation of WTP valuation. The WTP value gaps and its hidden motives to participate in the valuation as revealed from this study demonstrate that environmental conflicts among environmental groups do exist and are rising. We believe the study can offer a forum for articulating views and recommending decisions about public goods and reduce the environmental conflicts between two environmental groups. The results can strengthen the policy formulating process by including the views of environmental groups and serve as a reference for governmental policy even under a democratic system. Some limitations may hinder the extension of this study to other environmental groups as each environmental group is generally organized for specific objectives such as wetland conservations, opposition to nuclear power plants, etc. These environmental groups may independently conduct their objectives through a variety of environmental programs. In this paper, the two particular groups are drawn out as sample cases for surveying the preservation of the Chi-ku Wetland, and thus the results derived from the data surveying the two environmental groups may represent the partial views of general environmental groups.

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