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# Willingness-to-Pay of Tourists for the Conservation of the Ifugao Rice Terraces

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**ABSTRACT**

*The willingness-to-pay (WTP) of local and foreign tourists for the conservation of the Ifugao Rice Terraces, specifically the Rice Terraces of the Philippine Cordilleras, was estimated using the contingent valuation method. The terraces are found in four municipalities in the province of Ifugao in northern Philippines, and were inscribed in the UNESCO World Heritage List in 1995. In 2001, however, they were placed under the World Heritage in Danger List in 2001 owing to their deterioration. A contingent valuation survey was conducted among local (300 respondents) and foreign (250 respondents) tourists. Non-parametric (Turnbull) and parametric (Logit Regression) estimation were used to compute for their WTP to conserve the terraces. The estimated average WTP per visit for local and foreign tourists were PhP 440 (about USD 10) and PhP 3,124 (USD 71), respectively. These WTP estimates are much higher than the uniform fees collected by the municipalities from local and foreign tourists (about USD 0.20 and USD 0.60). For local tourists, the significant factors affecting WTP are gender (male), knowledge about the present condition of the terraces, and the bid amount, while for foreign tourists these are age, knowledge of UNESCO World Heritage Site status, and the bid amount. Adopting fees that are about 25% higher than the average WTP of local and foreign tourists can generate revenues that can cover about 20% of the cost requirement of implementing the master plan for the terraces. The contribution of tourism revenue can increase if higher fees will be collected, as the estimated average WTP for local and foreign tourists are much higher. Increasing the visitation rate can also have a positive effect on revenue, although this should consider the carrying capacity of the terraces so as not to compromise their integrity.*

***Key words:*** *contingent valuation method, Ifugao, Rice Terraces of the Philippine Cordilleras, sustainable financing mechanism, willingness-to-pay*

## INTRODUCTION

Filipinos take pride in the Ifugao Rice Terraces which they often refer to as the 8th Wonder of the World. While there are similar terraces in other parts of the Asia-Pacific Region, the Rice Terraces in Ifugao are the most famous because they reach the highest altitude of 1,600 m and are considered to be the best built and most extensive (Gonzales 2000). The terraces are located in the province of Ifugao, a landlocked province under the Cordillera Administrative Region in Northern Luzon. Some of the terraces, particularly those in the municipalities of Banaue, Kiangan, Hungduan and Mayoyao, were inscribed in the World Heritage List of the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1995 under the category of organically evolved landscapes. This category includes landscapes that developed as a result of an initial social, economic, administrative or religious imperative, and by association with and in response to the natural environment.

The terraces have deteriorated over the years, and have been reclassified to the World Heritage in Danger List in 2001 (Rössler 2005). Some of the threats to the terraces include their abandonment due to the neglect of the irrigation system in the area, causing many farmers to leave; unregulated development; tourism needs not being addressed; and the lack of an effective management system as threats to the terraces (UNESCO 2006). A 2006 UNESCO mission identified the need to develop a more coordinated, long-term funding and a more sustained local resource generation mechanism, including tourism revenues and the marketing of local products.

There have been many initiatives towards the preservation of the Rice Terraces. The World Heritage Committee (UNESCO 2005) listed these to be in the areas of water management, agricultural management, watershed management, hazard management, transport development, spatial restructuring and tourism development, cultural enhancement, and livelihood development. What appears to be lacking in all these efforts to save the terraces is the possibility of tapping the Filipino people and foreign visitors to provide incentives that will make the Ifugao remain in the area to tend the rice terraces that their ancestors have so painstakingly built more than 2,000 years ago.

This paper discusses the results of a study that sought to evaluate the possibility of capturing local and foreign tourists' willingness-to-pay for the conservation of the Rice Terraces of the Philippine Cordilleras (henceforth referred to as the Rice Terraces). It also identifies the factors affecting tourists' willingness-to-pay for the conservation of the terraces and estimates potential revenues from tourism if a conservation fee is collected.

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## METHODOLOGY

The contingent valuation (CV) method, a stated preference technique, was used to estimate tourists' willingness-to-pay for the conservation of the Ifugao Rice Terraces. Stated preference techniques refer to any technique that makes use of a questionnaire to determine people's preferences, particularly those that concern their monetary valuations of costs and benefits (Bateman *et al.* 2002). Stated preference techniques are usually employed when people's WTP cannot be inferred from markets. These techniques can also detect non-use values, and are particularly useful in estimating the non-use values of resources with local and national importance.

The CV method involves directly asking people, in a survey, how much they are willing to pay for a good, or willing to accept to give up a good. Contingent valuation is deemed more appropriate to use when the WTP for the environmental good or service in total is needed, as differentiated from choice modeling (CM) which is more applicable if the WTP for individual attributes is required (Bateman *et al*. 2002). In the case of the Ifugao Rice Terraces, it may be difficult for the respondents to distinguish among the terraces' various attributes, but it may be easier for them to relate to the value of the terraces as a whole. As such, the use of CV in this study was favored. Furthermore, CV is extensively used for heritage projects because it allows the conversion of qualitative values into quantified prices (Mason 2002). In Asia, several studies have used CV to estimate the value of heritage sites, such as the My Son Sanctuary World Heritage Site in Vietnam (Tuan and Navrud 2006), historic temples in Thailand (Udomsak 2006), and the Tubbataha Reefs National Marine Park (Subade 2005).

Due to financial and time constraints, the sample size was set at 550, of which 300 respondents were local tourists and 250 were foreign tourists. Ideally, this kind of survey should have taken place before the tourists have decided to come to Ifugao. However, interviewing tourists in their places of origin or at the airport was not feasible due to financial constraints and security considerations. Instead, the respondents were interviewed when they were already in Ifugao. For this reason, the CV question was posed as a contingent behavior question, and the respondents were requested to go back to the time when they were still going to make a decision regarding the places they would visit. They were then asked if they would still have visited Ifugao had they known that they would be made to pay a certain fee.

This approach was used to determine foreign tourists' WTP to visit the My Son world cultural heritage site in Vietnam (Tuan and Navrud 2006). The authors in the Vietnam study noted that asking tourists about their WTP when they have already arrived in the country would have placed them in a fait accompli situation, with no options to look for substitute sites. We recognize that the use of the contingent behavior question has limitations because the tourists were already in the area at the time of the interview, and possibly had already seen the terraces. This could bias WTP estimates upwards.

The steps in conducting a CV study, as described by Boyle (2003), were adopted, namely:

*Identifying the change in the quality to be valued* - the improvement in the management and conservation of the Ifugao Rice Terraces was valued;

*Identifying whose values will be estimated* - the domestic and foreign tourists' willingness-to-pay for the conservation of the terraces;

*Selecting a data collection method* - through personal interviews;

*Choosing a sample size* - the population of interest in this study consists of tourists visiting the site(s) since they are a good potential source of funds for the rehabilitation of degraded portions of the terraces. Due to financial and time constraints, the total sample size (n) was set at 550;

*Designing the information component of the survey instrument* - a detailed description of the Ifugao Rice Terraces as the resource to be valued, how the enhanced conservation program is proposed to take place, the payment vehicle, a decision rule, and the time frame of the payment, among other things;

*Designing the CV question* - the dichotomous choice format was used;

*Developing auxiliary questions* - questions that generate data to be used in analyzing the CV responses, like socio-economic data. Follow-up questions were also included to ensure that the respondents understand the questions asked;

*Pre-testing and implementing the survey* - the survey instrument was first pre-tested to assess its strengths and weaknesses, and revised based on the feedback generated. Three pre-tests were conducted, involving a total of 140 respondents, 75 of whom were interviewed in Laguna and 65 in Banaue. There were 112 Filipinos and 28 foreigners, who came from Australia, Canada, China, France, United States of America, Vietnam, Great Britain, East Timor, Indonesia, Burma, and Germany. The bid amounts used in the survey were generated from the pre-tests using an open-ended question to elicit WTP. After the revisions, the instrument was used in the survey implementation. The survey was conducted from May 18 to July 8, 2008 in the municipality of Banaue. The respondents were chosen systematically. The respondents were requested to sign a consent form before the interview; and

*Data analysis* - since the dichotomous choice format generated binary data, maximum likelihood techniques were used to estimate the log likelihood function and parameters.

The CV question that was posed to respondents is stated below:

*Suppose you are still in your country (province) of origin contemplating a visit to the Philippines (Cordillera Region). Would you have decided to visit the Ifugao Rice Terraces if you knew that you would be made to pay P____/visit, which will go to a fund for the conservation of the Terraces?*

The survey instrument was first pre-tested to assess its strengths and weaknesses, and revised based on the feedback

generated. Three pre-tests were conducted, involving a total of 140 respondents, 75 of whom were interviewed in the province of Laguna and 65 in Banaue, Ifugao. There were 112 Filipino and 28 foreign respondents in the pre-test.

The bid amounts used in the survey were generated from the pre-tests using an open-ended question to elicit WTP. The following bid amounts were used in the final survey: PhP 30, 50, 100, 200, 500, and 1,000 per visit for local tourists; and USD 10, 20, 50, 100 and 200 for foreign tourists. The survey was administered by trained enumerators over a two-month period in 2008 in the municipality of Banaue. The respondents were chosen systematically, and were requested to sign a consent form before the interview.

Several observations were dropped from the original survey data. In particular, respondents that had the following characteristics were removed from the data set before analysis:

- Respondents who agreed to a bid that was higher than their stated income;
- Undergraduate students that reported allowances rather than incomes. Graduate students who were earning income were however retained; and
- Respondents who had unusually high income (as compared to other respondents of similar age, education, location, and occupation). These were considered as either outliers and / or erroneous data. The per capita income (PPP adjusted) in the country of origin was also used as basis in deciding to drop these observations.

These *data* corrections led to a final sample size of 210 foreign respondents and 241 Filipino respondents.

Likewise, the standard protest vote and certainty corrections were also made. These response corrections, however, affected responses of only 11 observations. Respondents who signified that they were not sure about their answer or were not sure whether they are able to decide on the payment had their yes votes converted to no votes.

A logit regression was used to determine the factors affecting the probability of agreeing to an offered bid. The theoretical framework used for the model specification was based on Haab and McConnell (2002). The following parametric form for the logit regression was assumed:

$$\Pr ob(Yes) = \Phi(\mathrm{X}\beta - \mathrm{t}) = \frac{1}{1 - e^{\frac{\beta}{\sigma}\mathrm{X} - \frac{1}{\sigma}t}}$$

Here the X's are the independent variables that were used, while t represents the bid values that were offered to the respondents. This logit model was estimated using Maximum Likelihood Estimation (MLE). A split sample logit was used to analyze the willingness-to-pay of local and foreign tourists. Two models were used: a constant marginal utility of income (CMUI) and a varying parameters (VP) model. The WTP estimates derived from the logit regression were also compared with non-parametric estimates of the WTP. In particular, Turnbull estimates were used. The Turnbull WTP estimates were computed using the following formula:

$$E(WTP) = \sum_{j=0}^{M} B_j \left(F_{j+1} - F_j\right)$$

*where* :

$M$ : is the number of bids

$B$ : is the bid level

$F_j$ : proportion of No responses to the bid price $\mathrm{B_j}$

The sample weighted expected gross revenue was also calculated for each respondent that agreed to the bid offered to him or her. This weighted expected gross revenue was then regressed with bid and the square of the bid variable ($bid^2$) as independent variables.

## RESULTS AND DISCUSSIONS

The study focused on the rice terraces in Ifugao, a landlocked province in the Cordillera Administrative Region (Figure 1), particularly the UNESCO World Heritage Site of Banaue (Batad and Bangaan), Hungduan, Kiangan, and Mayoyao (Figure 2).

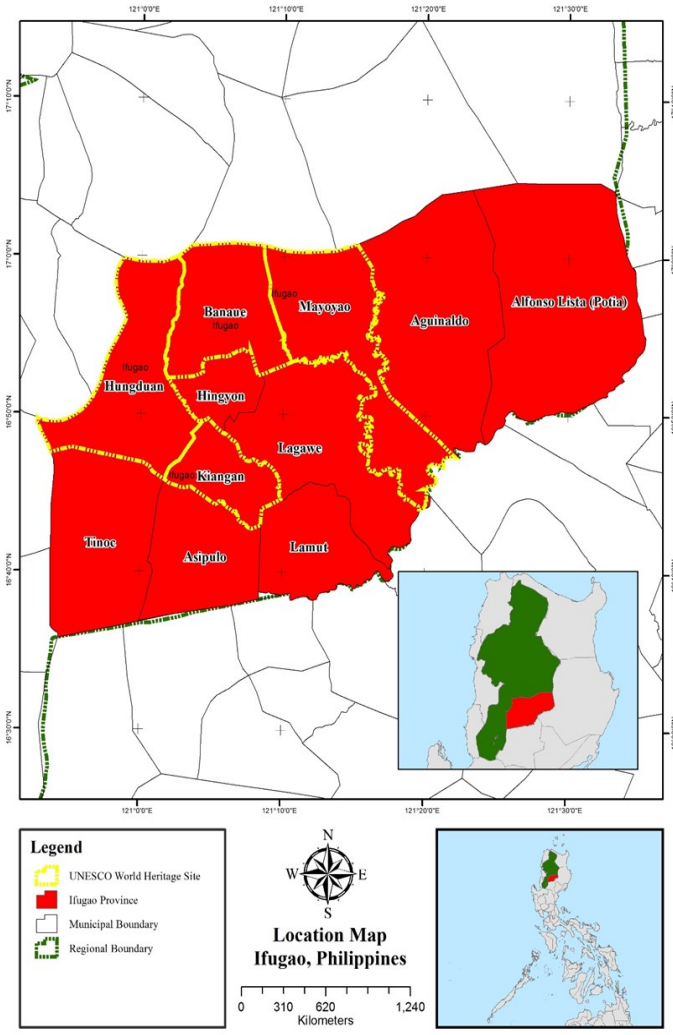


Figure1. Map of the study sites in the province of Ifugao, Philippines


Figure 2. The study site particularly the UNESCO World Heritage Site of Banaue (Batad) (a) and Bangaan (b) Hungduan (c), Kiangan (d), and Mayoyao (e)

There were 550 respondents interviewed in the final survey, 300 local and 250 foreign. The minimum age set for respondents was 18 years, but the oldest respondent interviewed was 74 years old. The average age of respondents was about 35 years old. The proportion of male and female was almost the same, but 58% of the respondents were single. In terms of educational attainment, the biggest group was that of college graduates. The respondents who were not employed were a minority, and most of them were students. On the other hand, about 80% of local tourists and 76% of foreign tourists were employed. The annual income ranged from zero (0) for students to PhP 4.33 million, with a mean of PhP 71,359 and PhP 459, 297 per year for local and foreign tourists, respectively. The undergraduate students were dropped from the sample.

**Responses to the Contingent Valuation Question**

The results of the various runs are shown in Tables 1 and 2. For the final sample of 241 local tourists, 93% said "yes" to the above question at a bid amount of PhP 30/visit. As expected, the number of respondents who answered "yes" decreased as the bid amount increased, and only 23% of the respondents said they would have still come to visit the terraces even if they were to pay PhP 1,000. On the other hand, 72% of the tourists answered in the affirmative at a bid amount of PhP 440 (USD 10), and the proportion of "yes" answers decreased as the bid amount increased. At the highest bid amount of PhP 8, 800 (USD 200), only 10% answered "yes".

All in all, there were 155 local and 93 foreign respondents who said "yes" to the WTP question, representing 64% and 44%, respectively. The top reason given was that they would like the terraces to be conserved. More than 50% also said that they would like to help the Ifugao farmers, they derived satisfaction knowing that they were contributing to a good cause, they would like their children and grandchildren to see the terraces, they cared a lot about the terraces, and they appreciated the efforts of our Ifugao ancestors in building the terraces.

For both local and foreign respondents who answered in the negative, the top two reasons given were that they could not afford the payment, and that it was the government's responsibility to conserve the terraces.

The tourists were asked whether they found the proposal to create a trust fund for the conservation of the terraces important. Almost all the local and foreign respondents said that the proposal was indeed important, with an average of 98% for all respondents. Furthermore, 87% of all respondents said that they were in a position to decide whether or not to pay the conservation fee.

**Logit Results**

The respondents' incomes were classified into four categories, as shown in Table 3. The logit results for factors affecting local and foreign tourists' WTP are given in Tables 4 and 5, respectively. For the VP model, the interaction terms between income categories and the bid level were all significant. This means that relative to the highest income category, those in the lower income brackets were less likely to say yes to the bid offered. This conforms to standard economic logic indicating the possibility of the budget constraint being binding at lower levels of income. In terms of the foreign tourists' demographic variables, age seems to be a consistent factor in determining the

Table 1. Distribution of "yes" and "no" responses to the CV question, local tourists.

| Bid Amount (PhP) | Original Sample (n=300) | | | | Sample without Outliers, with no Correction (n=241) | | | | Sample without Outliers, with Correction (n=241) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Yes | | No | | Yes | | No | | Yes | | No | |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| 30 | 47 | 94 | 3 | 6 | 43 | 93 | 3 | 7 | 43 | 93 | 3 | 7 |
| 50 | 46 | 92 | 4 | 8 | 32 | 91 | 3 | 9 | 31 | 89 | 4 | 11 |
| 100 | 40 | 80 | 10 | 20 | 32 | 84 | 6 | 16 | 30 | 79 | 8 | 21 |
| 200 | 31 | 62 | 19 | 38 | 23 | 59 | 16 | 41 | 22 | 56 | 17 | 44 |
| 500 | 23 | 46 | 27 | 54 | 20 | 47 | 23 | 53 | 20 | 47 | 23 | 53 |
| 1,000 | 13 | 26 | 37 | 74 | 11 | 28 | 29 | 73 | 9 | 23 | 31 | 78 |
| **Total** | **200** | | **100** | | **161** | | **80** | | **155** | | **86** | |

Table 2. Distribution of "yes" and "no" responses to the CV question, foreign tourists.

| Bid Amount (US$) | Original Sample (n=250) | | | | Sample without Outliers, with no Correction (n=210) | | | | Sample without Outliers, with Correction (n=210) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Yes | | No | | Yes | | No | | Yes | | No | |
| | No. | | No. | % | No. | % | No. | % | No. | % | No. | % |
| 10 | 37 | 74 | 13 | 26 | 28 | 78 | 8 | 22 | 26 | 72 | 10 | 28 |
| 20 | 30 | 60 | 20 | 40 | 25 | 57 | 19 | 43 | 24 | 55 | 20 | 45 |
| 50 | 23 | 46 | 27 | 54 | 20 | 45 | 24 | 55 | 19 | 43 | 25 | 57 |
| 100 | 22 | 44 | 28 | 56 | 20 | 43 | 27 | 57 | 20 | 43 | 27 | 57 |
| 200 | 7 | 14 | 43 | 86 | 5 | 13 | 34 | 87 | 4 | 10 | 35 | 90 |
| **Total** | **119** | | **131** | | **98** | | **112** | | **93** | | **117** | |

Table 3. Income categories used in the logit regression.

| Income Category | Local Tourists (PhP mo $^{-1}$) | Foreign Tourists (USD mo $^{-1}$) |
|---|---|---|
| I | 0-5, 000 | 0-550 |
| II | 5, 001-13, 500 | 551-1, 450 |
| III | 13, 501-24, 500 | 1, 451-2, 800 |
| IV | 24, 501-300, 000 | 2, 801-8, 000 |

probability of saying yes to a particular bid level. All four models showed that for foreign tourists, the likelihood of visiting the IRT increases with the respondent's age. In contrast, age is not a determinant for local tourists. For them, the retrospective probability of visiting the IRT for a given offered bid is related with gender. Local male tourists were more likely to not change their travel plans given an offered bid than local female tourists were. This result is robust across the different models except for the certainty and protest corrected CMUI Model.

Knowledge variables are significant determinants of the probability of agreeing to offered bid amounts. Like the demographic variables, there are differences between local and foreign tourists. For local tourists, knowing that the terraces are in poor condition reduces the probability of going to the IRT at a given bid price. This result however is not evident for both the uncorrected CMUI and VP models. This means that protest and uncertainty among Filipino respondents resulted in biased estimates, in particular, an upward bias. For foreign tourists, on the other hand, knowing that the terraces are UNESCO Heritage sites increases the probability of visiting the IRT. This result is robust for all four models.

Finally, the bid levels for all four models were highly significant. The sign of this variable was also theoretically consistent. However, a Wald test for the corrected and uncorrected VP models for the Filipino sub-sample showed that the coefficients of the interaction between bids and income

Table 4. Logit results for factors affecting local tourists' WTP.

| Explanatory Variable | No Correction | | Protest and Certainty Corrected | |
|---|---|---|---|---|
| | Constant Marginal Utility Model | Varying Parameters Model | Constant Marginal Utility Model | Varying Parameters Model |
| Bid | -0.003*<br>(0.00) | | -0.003*<br>(0.00) | |
| Knowledge of UNESCO Listing | -0.008<br>(0.57) | -0.305<br>(0.58) | 0.213<br>(0.57) | -0.098<br>(0.56) |
| Knowledge of IRT Condition[a] | -0.428<br>(0.37) | -0.470<br>(0.36) | -0.664***<br>(0.36) | -0.691***<br>(0.36) |
| Age | 0.012<br>(0.01) | 0.013<br>(0.01) | 0.008<br>(0.01) | 0.010<br>(0.01) |
| Education | -0.113<br>(0.15) | 0.110<br>(0.33) | -0.073<br>(0.014) | -0.074<br>(0.14) |
| Sex | 0.536***<br>(0.33) | 0.567***<br>(0.33) | 0.507<br>(0.33) | 0.540***<br>(0.32) |
| Income Category I x Bid | | -0.003*<br>(0.00) | | -0.003*<br>(0.00) |
| Income Category II x Bid | | -0.003*<br>(0.00) | | -0.004*<br>(0.00) |
| Income Category III x Bid | | -0.004*<br>(0.00) | | -0.003*<br>(0.00) |
| Income Category IV x Bid | | -0.003*<br>(0.00) | | -0.003*<br>(0.00) |
| Constant | 1.704**<br>(0.87) | 0.159**<br>(0.89) | 1.601***<br>(0.84) | 1.522***<br>(0.85) |
| Sample Size | 241 | 241 | 241 | 241 |
| % of Correct Predictions | 54 | 76 | 53 | 76 |
| Likelihood Ratio | -121.93 | -123.30 | -124.16 | -125.53 |

*0-None; 1-Fair; 2-Excellent*
**- significant at 1%; ** - significant at 5%; *** - significant at 10%*

categories were significantly different from each other. This might imply that in terms of specification, the VP model is more appropriate for this sub-sample. For the foreign tourist sub-sample and for both the corrected and uncorrected VP models, the interaction terms for the bid and income category II and the bid and income category IV were found to be significantly different at a 5% level. This means that for a given bid level, foreigners with higher incomes are less likely to visit the IRT.

The logit regression results also offer some directions for future policy. The results that different demographic and information variables determine the willingness to visit the IRT given a bid offer may help in defining ways of advertising and packaging the IRT for tourism. To attract foreign tourists, the Heritage Site status of the IRT should be highlighted in advertising. It should also be developed to become a niche destination for say, foreign retirees. The place could be developed to offer activities other than viewing the IRT that would be of interest to older generations.

**Estimates of the WTP of Local and Foreign Tourists**

Both nonparametric (Turnbull) estimation and parametric estimation were used to compute the WTP. As expected, several WTP estimates were derived depending on the procedure that was used as well as on the correction for certainty and protest votes. These estimates are shown in Table 6.

In general, the average parametric WTP were lower compared to the non-parametric estimates. Certainty and protest corrected WTP were consistently lower compared to the uncorrected estimates for the Filipino sub-sample. However, this is not true for the foreign tourist estimates. Certainty and protest-corrected parametric estimates were (oddly) in general not lower than their uncorrected counterparts were. However, the overall average WTP estimate for both the corrected CMUI and VP models (column (h) of Table 6 turned out to be still lower than the uncorrected average parametric estimate. This may mean that for the foreign tourist sample, protest votes were not a factor. Otherwise, the corrected WTP should have been lower. The higher corrected estimates were most probably due to the correction for uncertainty.

Table 5. Logit results for factors affecting foreign tourists' WTP.

| Explanatory Variable | No Correction | | Protest and Certainty Corrected | |
|---|---|---|---|---|
| | Constant Marginal Utility Model | Varying Parameters Model | Constant Marginal Utility Model | Varying Parameters Model |
| Bid | -0.014*<br>(0.00) | | -0.013*<br>(0.00) | |
| Knowledge of UNESCO Listing | 0.755**<br>(0.38) | 0.908**<br>(0.38) | 0.628***<br>(0.36) | 0.754**<br>(0.36) |
| Knowledge of IRT Condition[a] | 0.029<br>(0.34) | 0.007<br>(0.33) | -0.008<br>(0.34) | -0.015<br>(0.33) |
| Age | 0.031**<br>(0.01) | 0.023***<br>(0.01) | 0.031**<br>(0.01) | 0.024***<br>(0.01) |
| Education | 0.133<br>(0.16) | 0.099<br>(0.10) | 0.024<br>(0.159) | -0.003<br>(0.16) |
| Sex | -0.599***<br>(0.31) | -0.494<br>(0.32) | -0.536<br>(0.31) | -0.474<br>(0.32) |
| Income Category I x Bid | | -0.018**<br>(0.01) | | -0.0152***<br>(0.01) |
| Income Category II x Bid | | -0.006*<br>(0.00) | | -0.007**<br>(0.00) |
| Income Category III x Bid | | -0.012*<br>(0.00) | | -0.011*<br>(0.00) |
| Income Category IV x Bid | | -0.017*<br>(0.00) | | -0.016*<br>(0.00) |
| Constant | -0.772<br>(0.92) | -0.581<br>(0.91) | -0.400<br>(0.91) | -0.275<br>(0.90) |
| Sample Size | 210 | 210 | 210 | 210 |
| % of Correct Predictions | 65 | 63 | 65 | 62 |
| Likelihood Ratio | -123.04 | -124.69 | -123.58 | -125.87 |

*a- 0-None; 1-Fair; 2-Excellent*
** - significant at 1%; ** - significant at 5%; *** - significant at 10%*

In particular, foreign tourists were less certain with their answers for lower bids. CMUI estimates were lower than VP model estimates for local tourists. This result is robust to certainty and protest corrections. For foreign tourists, on the other hand, estimates from the VP model were higher than that of the CMUI. However, this relationship was reversed once certainty and protest votes were accounted for.

For local tourists, the estimated WTP ranged from as low as PhP 394 to as high as PhP 655 per person. On the average, local tourists' WTP falls between PhP 440 (USD 10) (certainty and protest corrected) to PhP 506 (USD 11.5) (no correction) per person. On the other hand, the WTP of foreign tourists was estimated to range from PhP 2, 684 (USD 61) (no correction) to PhP 7, 744 (USD 176) (certainty and protest corrected) per person. The average WTP of foreign tourists is between PhP 3, 124 (USD 71) (certainty and protest corrected) to PhP 3, 388 (USD 77) (no correction) per person. For both local and foreign tourists, there seems to be a U-shaped relationship between income (categories) and estimated WTP, thus suggesting that WTP first decreases as income increases and afterwards a positive relationship becomes evident.

Considering that the respondents were already in Ifugao when they were interviewed and could have already seen the rice terraces, it is highly possible that the WTP estimates generated by the models have some bias in the upward direction. Different WTP estimates may have been arrived at had the tourists been interviewed before they have gone to Ifugao. As such, recommendations based on these estimates should be made on the conservative side.

A total of 248 local and foreign respondents answered "yes" to the WTP question with 89% indicating that they would like the terraces to be conserved, and 66% would like to help the Ifugao farmers. There were also respondents who answered "yes" for altruistic (62%) and bequest (61%) reasons. The top two reasons why some respondents answered "no" to the WTP question were

Table 6. Non-parametric (Turnbull) and parametric estimates of local and foreign tourists' WTP.

| | Turnbull (a) | Constant MU of Income (b) | Parametric Varying Parameters | | | | Average Parametric (g) | |
|---|---|---|---|---|---|---|---|---|
| | | | Income Category I (c) | Income Category II (d) | Income Category III (e) | Income Category IV (f) | | |
| Local tourists, P/person No Correction | 424 | 605 | 583 | 567 | 533 | 655 | 589 | 506 |
| Certainty and Protest Corrected | 394 | 435 | 532 | 453 | 478 | 532 | 486 | 440 |
| Foreign tourists, US$/ person No Correction | 61 | 73 | 61 | 176 | 90 | 63 | 93 | 77 |
| Certainty and Protest Corrected | 41 | 119 | 70 | 153 | 98 | 67 | 101 | 71 |

they found the bid amount to be too high (51%), and they could not afford the payment (41%).

**Potential Revenues from Tourism**

The sample weighted expected gross revenue was also calculated for each respondent that agreed to the bid offered to them, and was then regressed with bid and bid$^2$ as independent variables. The results of these regressions are as follows:

Local Tourist (corrected for certainty and protest votes, CMU Model):

$$E[\text{expected revenue}] = 0.425 \times bid - (4 \times 10^{-4}) \times bid^2$$

Foreign Tourist (corrected for certainty and protest votes CMU Model):

$$E[\text{expected revenue}] = 0.273 \times bid - 0.001 \times bid^2$$

Local Tourist (corrected for certainty and protest votes, VP Model):

$$E[\text{expected revenue}] = 0.442 \times bid - (4 \times 10^{-4}) \times bid^2$$

Foreign Tourist (corrected for certainty and protest votes, VP Model):

$$E[\text{expected revenue}] = 0.267 \times bid - 0.001 \times bid^2$$

These regressions imply the following (expected) revenue-maximizing bids or prices shown in Table 7. These results, along with the WTP estimates, show that the revenue-maximizing bid is higher than what individuals are willing to pay for the IRT. Furthermore, on average, local tourists' WTP is closer to the revenue-maximizing bid than that of foreign tourists. Using the conservative estimates (i.e. CMU model) for the revenue- maximizing bid/price and with say a maximum of 43,526 local tourists and 26,585 foreign tourists a year, the

Table 7. Expected revenue-maximizing bids/prices by tourist type and model.

| Tourist Type/Model | Bid/Price That Maximizes Expected Revenue |
|---|---|
| Local Tourist (corrected for certainty and protest votes CMU Model) | PhP 535/person |
| Foreign Tourist (corrected for certainty and protest votes, CMU Model) | USD 105/person |
| Local Tourist (corrected for certainty and protest votes, VP Model) | PhP 537/person |
| Foreign Tourist (corrected for certainty and protest votes, VP Model) | USD 112/person |

Local Government can expect at most around PhP 5.0 M and PhP 17.0 M yr $^{-1}$ from local and foreign tourists, respectively.

Table 8 shows the potential revenues that can be generated by collecting fees from local and foreign tourists. For local tourists, increasing the fee from the current PhP 10 to PhP 20 per visit being collected in Hungduan and Banaue, respectively, to PhP 30 per visit can generate PhP 1.44 M yr $^{-1}$, while collecting PhP 50 per visit can give revenues of PhP 2.4 M yr $^{-1}$. Collecting PhP 100 per visit will double the revenue to PhP 4.8 M.

On the other hand, the benefit of collecting higher fees from foreign tourists is very significant. For example, collecting a minimum of USD 10 per visit can generate about PhP 14.4 M, and increasing this to USD 20 per visit will likewise double the

Table 8. Potential revenues from tourism.

| Local Tourists | | Foreign Tourists | | |
|---|---|---|---|---|
| Amount of Fee (P/ tourist) | Potential Revenues (P/yr) | Amount of Fee (USD/ tourist) | Potential Revenues (USD/yr) | Potential Revenues (P/year) |
| 30 | 1,440,000 | 10 | 320,000 | 14,400,000 |
| 50 | 2,400,000 | 20 | 640,000 | 28,800,000 |
| 100 | 4,800,000 | 50 | 1,600,000 | 72,000,000 |
| 200 | 9,600,000 | 100 | 3,200,000 | 144,000,000 |
| 500 | 24,000,000 | | | |

revenue to PhP 28.8 M. The Tubbataha Reefs National Marine Park, another UNESCO Heritage Site in the Philippines, collects an entry fee of PhP 3,000 per visit (TPAMB 2012).

Furthermore, 60% of the foreign respondents in the CV survey expressed WTP USD 20/visit, which makes this a reasonable amount to charge foreign tourists. **A**ssuming that the fees for local and foreign tourists will be PhP 100 and USD 20 per visit, respectively, the annual revenue will be PhP 33,600,000 $yr^{-1}$. On the other hand, the total cost of implementing the Ifugao Rice Terraces 10-year Master Plan (PLGU-Ifugao 2002) is PhP 1.034 B, or about PhP 168 M $yr^{-1}$(annualized cost over the 10-year implementation of the master plan and an interest rate of 10%). The revenues from tourists can account for about 20% of the annualized cost of implementing the master plan. This is a positive step in promoting financial self-sufficiency (Mourato *et al.* 2004) for the management of the terraces. The contribution of tourism revenues can improve if higher fees will be charged. The revenue estimate was based on conservative fees of PhP 100 and USD 20 for local and foreign visits, which are much smaller than the mean WTP of PhP 440 and USD 71, respectively. Furthermore, the public good benefits generated by cultural heritage, in this case the rice terraces, can justify subsidy for their maintenance (Throsby 2007).

Admittedly, the collection of fees from tourists is a challenge in Ifugao because some of the terraces can be viewed from the national highway. Possible mechanisms through which fees may be collected include incorporating the fee in business permits and local taxes and the collection of an environmental/ conservation fee from tourists by the tourism office. Funds may be also raised through donations, and private companies/ individuals may be encouraged to adopt the rice terraces, the size of which will depend on the amount of donation. This scheme was done with considerable success in La Mesa Watershed (The Manila Times 2013).

Tourism revenues may also increase if visitation rates will improve. Enhanced cultural awareness, increasing economic levels, availability of more free time, and improved transportation and communication facilities have contributed to an increase in the consumption of cultural goods (Bedate *et al.* 2004). However, the carrying capacity must also be considered, as ancient structures such as the rice terraces need to be well maintained. Exceeding its carrying capacity may result in deterioration and degradation, and may require even more funds to address these problems (Mourato *et al.* 2004).

## CONCLUSIONS

The study estimated the willingness-to-pay of local and foreign tourists for the conservation of the Rice Terraces of the Philippine Cordilleras using the contingent valuation method. The average WTP for local and foreign tourists are PhP 440 per visit and USD 71 per visit, respectively. For local tourists, the significant factors affecting WTP are gender (male), knowledge about the present condition of the terraces, and bid amount. For foreign tourists, the significant factors affecting WTP are age, knowledge as UNESCO World Heritage Site, and bid amount. The revenue-maximizing fees range from PhP 535 to PhP 537 per person for local tourists, and USD 105 to USD 112 per person for foreign tourists.

The results of the study clearly show the potential of generating funds for the conservation of the Terraces from tourism. The local governments are usually hesitant to increase fees because higher fees may drive tourists away. However, it should be pointed out that such a fee will only be a small amount compared to the total travel costs tourists incurred to reach Ifugao. Our results also show that for as long as tourists are informed about the condition and problems of the rice terraces, most of them are willing to help in their conservation.

The present rates being collected by local governments, ranging from PhP 10 to PhP 30 per person, are way too low, and there is a great opportunity to capture a higher proportion of the tourists' WTP. Collecting the conservative amounts of PhP 100 per local visit and USD 20 per foreign visit will generate annual revenues that can cover about 20% of the cost requirement of implementing the master plan for the terraces. It may even be possible to have fees higher since the estimated average WTP of both local and foreign tourists are much higher than PhP 100 and USD 20, respectively. Likewise, a more aggressive promotion of the terraces can increase the visitation rate and consequently result in higher tourism revenues. However, this should consider the carrying capacity of the terraces so as not to compromise their integrity.

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## LITERATURE CITED

Bateman, I.J., R.T. Carson, B. Day, M. Hanemann, N. Hanley, T. Hett, M. Jones-Lee, G. Loomes, S. Mourato, E. Özdemiroglu, D.W. Pearce, R. Sugden & J. Swanson.

2002. Economic Valuation with Stated Preference Techniques: A Manual. United Kingdom: Edward Elgar Publishing Limited, 458 p.

Bedate, A., L.C. Herrero & J.A. Sanz. 2004. Economic valuation of the cultural heritage: application to four case studies in Spain, *Journal of Cultural Heritage* 5:101-111.

Boyle, K.J. 2003. Contingent Valuation in Practice. *In:* Champ, P.A., K.J. Boyle & T.C. Brown, Eds., A Primer on Non-market Valuation. The Netherlands: Kluwer Academic Publishers.

Calderon, M.M., J.T. Dizon, A.J.U. Sajise, R.T. Andrada II, N.C. Bantayan & M.G. Salvador. 2009. Towards the Development of a Sustainable Financing Mechanism for the Conservation of the Ifugao Rice Terraces in the Philippines, Research Report No. 2008-RR10. Economy and Environment Program for Southeast Asia. Singapore.

Gonzales, R.M. 2000. Platforms and Terraces: Bridging Participation and GIS in Joint-Learning for Watershed Management with the Ifugaos of the Philippines, PhD thesis, Wageningen University.

Haab, T.C. & K.E. McConell. 2002. Valuing Environmental and Natural Resources: The Economics of Non-Market Valuation. Cheltenham, UK: Edward Elgar.

Mason, R. 2002. Assessing Values in Conservation Planning: Methodological Issues and Choices, *In:* Assessing the Values of Cultural Heritage, A Research Report. The Getty Conservation Institute.

Mourato, S., E. Ozdemiroglu, T. Hett & G. Atkinson. 2004. Pricing Cultural Heritage: A New Approach to Managing Ancient Resources, *World Economics* 5(3).

Provincial Local Government Unit – IFUGAO, Ifugao Rice Terraces Master Plan, 2002.

Rössler, M. 2005. World Heritage Cultural Landscapes: A Global Perspective. *In:* Brown, J., N. Mitchell & M. Beresford, Eds., The Protected Landscape Approach. IUCN.

Subade, R.F. 2005. Valuing Biodiversity Conservation in a World Heritage Site: Citizens' Non-Use Values for Tubbataha Reefs National Marine Park, Philippines. Economy and Environment Program for Southeast Asia Research Report.

Throsby, D. 2007. Regional Aspects of Heritage Economics: Analytical and Political Issues, *Australasian Journal of Regional Studies* 13-1:21-30.

Tubbataha Protected Area Management Board (TPAMB). Conservation fee of Tubbataha Reefs Natural Park. retrieved on 06 June 2012 . <http://tubbatahareef.org/wp/permitting_process#fees>.

Tuan, T.H. & S. Navrud. 2006. Valuing cultural heritage in developing countries: comparing and pooling contingent valuation and choice modeling estimates. *Environ Resource Econ* 38:51-69.

Udomsak, S. 2006. Economic Valuation of Cultural Heritage: A Case Study of Historic Temples in Thailand, Economy and Environment Program for Southeast Asia Research Report, 49 pp.

United Nations Educational, Scientific and Cultural Organization. 2005. 29th Session of the World Heritage Committee, Durban, South Africa.

United Nations Educational, Scientific and Cultural Organization. 2006. 30th Session of the World Heritage Committee. Vilnius, Lithuania.

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[1]Sample Weighted Expected Gross Revenue=[(Probability of paying) *(% of Yes Votes/Bid)*Bid. The probability of payment was generated from the logit regressions discussed in the previous section. To interpret this, for example, about 90% of local tourists said yes to a bid price of P 30. This means that 9 out of 10 local tourists would be expected to pay P30*(Probability of paying).

[2]All coefficients are significant at 1% level

[3]The revenue-maximizing bid was calculated by taking the derivative of the expected revenue equation with respect to the bid and equating it to zero

[4]Based on 2004 tourist arrivals in Banaue

[5]US$ 1= PhP 44