Valuation of the Historic Environment

The scope for using results of valuation studies in the appraisal and assessment of heritage-related projects and programmes

Annex – Annotated Bibliography of Heritage Valuation Studies

July 2005

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Annotated Bibliography of Heritage Valuation Studies

This annex to the main report accompanies the literature review in Section 4, by providing more detailed summaries of recent valuation studies that have been undertaken in relation to heritage assets in the historic environment. Each summary is structured so as to include:

- The study reference and details of other locations in which information concerning the study is available;
- A description of the heritage asset and its significance;
- A summary of the economic valuation methodology employed:
- A description of the valuation scenario – the context in which economic values where elicited;
- A summary of the results reported by the study;
- A brief discussion of the main findings and issues highlighted by the study (the 'comments' section);
- An assessment of the study's suitability for value transfer applications, and;
- The study's abstract.

The summaries are arranged in alphabetical order and the majority are two to three pages in length.

Report should be cited as:
eftec (2005) *Valuation of the Historic Environment - the scope for using results of valuation studies in the appraisal and assessment of heritage-related projects and programmes. Annex - Annotated Bibliography of Heritage Valuation Studies.* Report to English Heritage, the Heritage Lottery Fund, the Department for Culture, Media and Sport and the Department for Transport.

Alberini et al. (2003)

1. Study Reference

Alberini, A., Riganti, P. and Longo, A. (2003) 'Can People Value the Aesthetic and Use Services of Urban Sites? Evidence from a Survey of Belfast Residents', *Journal of Cultural Economics*, Volume 27, Number 3-4, 193 – 213.

2. Heritage Asset

The study focuses on St. Anne's Cathedral Square, Belfast. The square faces St Anne's Cathedral and is at the core of one the oldest areas of Belfast city (the Cathedral Quarter), dating from the 19th and early 20th Century. It is characterised by a mixture of historical buildings styles and interesting street patterns. The square is rectangular in shape and is part of a conservation area where the height of buildings does not exceed six stories. The study also features an unnamed, abstract (computer-generated) square which is designed to be similar to St. Anne's in all respects except for the cultural and historical dimension.

3. Economic valuation methodology

Choice experiment – respondents were asked to choose between pairs of regeneration projects for either St. Anne's Square or the abstract square. Regeneration projects for the two squares were defined by four attributes: (1) the height of buildings, (2) the relative amount of open space compared to built space, (3) their use (split between retail and residential) and (4) the cost to respondent of the regeneration project. Levels of attributes were as follows: height of building – same as current or taller than current height; open space – current, decrease/increase by 50%; use (residential to retail) – 50:50, 25:75, 75:25; and price - £5, £10, £20 or £30 (which would be incurred as a one-time addition to income tax). Overall there were total 72 regeneration alternatives. After removal of dominated or identical pairs, respondents were presented with two alternatives to choose between, which were selected at random.

A total of 254 people were interviewed face-to-face in the centre of Belfast in December 2001(resulting in 244 usable responses). The survey featured two sub-samples, one where respondents considered transformations of St Anne's square and one where respondents considered transformations of the abstract square.

4. Valuation Scenario

The St Anne's Square historic area faces progressive deterioration arising from a lack of investment and long-term neglect. All scenarios focussed on preferences for, and the associated economic value of, regeneration projects. The study sought to determine whether preferences change due to the significance or uniqueness of the asset. Hence, regeneration projects were presented as hypothetical transformations, where both the attributes and level of attributes were identical for both St Anne's Square and the abstract square. Therefore, if respondents' choices between the same attributes (or regeneration projects) when they are used to define St Anne's Square to when they are used to define the abstract square, the reason for this difference can be attributed to the historical and cultural significance of St Anne's to each respondent. The survey focussed on the preferences of Belfast residents, on the assumed basis that changes to St. Anne's Cathedral Square will primarily affect the welfare of the city's residents.

5. Valuation Results

The sample population was found to be similar to the population of Northern Ireland, with an average respondent age of 36 years and average household income of £16,000 a year. The two sub-samples were found not to be statistically different in most variables, except for income, gender and educational attainment.

The analysis (using an estimated conditional logit model) suggests that respondents prefer regeneration alternatives for St. Anne's that entail more open space (specifically, increasing open space by 50% increases the probability that a respondent will choose a project by 25%). In contrast, for the abstract square, the coefficient for proportion of open space is found not to be statistically significant. Respondents also prefer projects which maintain the current height of buildings (six stories) and increases residential use of buildings. However in the abstract square, projects with higher proportions of residential buildings are less preferred.

For the abstract square, price is found to be negatively related to the probability of choosing a project, i.e. the higher the cost of an alternative project, the less likely it is that respondents will choose that project. The estimated implicit marginal prices for attributes of regeneration projects for the abstract square are reported in Table 1. The study finds one result for St. Anne's Square that is contrary to prior expectations; the coefficient on price is positive and significant, i.e. the higher the cost of a project, the more likely will respondents choose it. Correspondingly the paper does not present implicit marginal prices for attributes for St. Anne's.

Table 1: Implicit marginal prices for the abstract square

Attribute and marginal change	Implicit price
50% increase in open space	£3.00
Percentage point increase in retail space at expense of residential space	£0.40
Avoid increase in height	£7.20

6. Comments

The paper outlines several possible explanations for the unexpected coefficient sign on the price attribute for St. Anne's Square. A potential explanation posited is that in absence of more detailed information, respondents interpret the stated price of a project as an indication of quality, leading respondents to pick the more expensive project since it is believed to be of higher quality. In addition it may be the case that attributes used in the survey do not adequately capture all aspects of the square (such as aesthetics or services) that influence respondents' decision-making. This could reinforce the tendency to use price as a guide for quality of a project.

A noticeable feature of the valuation scenario design is the omission of a 'status quo' option in the choice sets presented to respondents, where the current state of the square may be chosen at no additional cost to the respondent. The authors cite two reasons for this approach. Firstly, for the abstract square, the status quo would be ill-defined, implying that St. Anne's must also be treated as such for comparable purposes. Secondly, the stated purpose of the analysis is not to estimate willingness to pay itself, but to assess how preferences are influenced by architectural and land use attributes of public spaces. It could also be the case that changes to the status quo implied by regeneration projects at St. Anne's may not have been sufficiently clear to respondents.

7. Suitability for Value Transfer

The study gives an indication of preferences towards certain aspects of projects and finds that with the exception of the height attribute, respondents' value attributes differently for St. Anne's Square from the abstract square. If the two squares are assumed to be perfectly comparable in all other respects, then these differences should be attributable to the historic and cultural significance of St. Anne's.

In direct reference to the application of value transfer, the authors state that further research is needed to establish the circumstances under which value transfer may be applied or avoided in relation to cultural and urban goods.

8. Abstract

This study explores the potential of choice experiments for planning decisions on urban sites. The authors elicit people's preferences for regeneration projects that change the aesthetic and use character of specified urban sites. They use a split-sample design with two sets of regeneration

projects. The first entails hypothetical transformations of an actual square with an important cultural and historical dimension. The other consists of hypothetical transformations of an abstract square which they try to make as close as possible to the former in all respects, except for its cultural and historical dimension. Each regeneration project is defined by aesthetic and use attributes. The results suggest that individual choices *are* explained by the attributes, and that the marginal utilities *are* significantly different across projects for the actual and the abstract square.

Alberini et al. (2004)

1. Study Reference

Alberini, A., Rosato, P., Longo, A. and Zanatta, V. (2004) 'Information and Willingness to Pay in a Contingent Valuation Study: The Value of the S. Erasmo in the Lagoon of Venice', *FEEM Working Paper Series*, 19.2004.[1]

2. Heritage Asset

The study focuses on the island of St. Erasmo, which is located in the Lagoon of Venice, Italy. Venice and the Lagoon are designated as a UNESCO World Heritage site. In addition the Lagoon of Venice is considered to be a unique hydrological ecosystem. In contrast to other, more well-known islands in the Lagoon, St. Erasmo has very few historical or architectural features.

3. Economic valuation methodology

This contingent valuation exercise employs a dichotomous choice elicitation format and was administered via a telephone survey of sample of residents of the Veneto region of Italy. The sample included both respondents who visited St. Erasmo and those who did not normally visit the island. In total 1,330 completed surveys were administered.

4. Valuation Scenario

The island of St. Erasmo is subject to coastal erosion, degraded environmental quality and insufficient infrastructure and services. The study sought respondent WTP for a publicly funded programme to improve environmental quality, both directly and indirectly (via the construction of infrastructure), on and around the island of St. Erasmo. The programme include beach nourishment to offset erosion, drainage of inner canals, construction of a wastewater treatment facility, refurbishment of sewage lines and water ducts and restoration of the ancient Maximilian's Tower.

The payment vehicle in the valuation scenario was additional tax payments, and the payment question was phrased as a referendum, with programme being implemented and funded if a majority voted for it. The tax amount was varied across households. If respondents were willing to vote yes to initial tax amount, a follow-up question asked if they would pay 50% more than the first bid. Where respondents were not willing to pay the initial tax amount, the follow up question featured a 50% less bid. Initial bid amounts ranged from €10 to €100.

The resident population of St. Erasmo is 800, and as such the survey focussed on non-resident beneficiaries in the Venice region in terms of (recreational) use value (i.e. beach visits during the summer) and also non-use values.

5. Valuation Results

In the survey, the average age of respondents was around 50 years old, and average household income was roughly €21,000 per annum. Nearly 70% of respondents were female, while 41% were employed, 23% retired and 32% did not work outside the home (students, homemakers, unemployed). In the year leading up to the survey, approximately a quarter of respondents had visited the lagoon and 8% had been to St. Erasmo. Overall two-thirds of respondents knew of St. Erasmo prior to taking part in the survey. Use of the lagoon and knowledge of St. Erasmo were found to decline with distance of a respondent's residence from the lagoon.

[1] This paper has since been published as Alberini, A., Rosato, P., Longo, A. and Zanatta, V. (2004) 'Information and Willingness to Pay in a Contingent Valuation Study: The Value of the S. Erasmo in the Lagoon of Venice', *Journal of Environmental Planning and Management*, vol. 48, no. 2, 155-175.

Estimated mean and median WTP amount s are reported in Table 1. The questionnaire elicited information from respondents so that WTP amounts could be estimated for specific sub-samples. The 'lagoon users' refers to those who had visited the St. Erasmo or the lagoon in the past 12 months, 'potential users' those who were not current users but stated that they may use the resource in the future after the public works programme had taken place, and finally 'non-users' were made up of respondents not in the other two categories. A test of significance indicated that mean WTP for users and potential users were not statistically different from each other, but are statistically different from the lower non-users amount.

Table 1: Mean and median WTP per household for entire survey sample and sub-sample user groups

	All respondents	**Lagoon users**	**Potential users**	**Non-users**
Mean WTP (€)	66.61 (5.42)	91.89 (15.57)	70.64 (6.92)	36.21 (7.72)
Median WTP (€)	20.39 (1.52)	36.09 (4.45)	33.28 (2.56)	4.80 (1.20)

Notes: n=1326 for all respondents. Standard errors in parenthesis

The figures in Table 1 suggest that the use value derived by current users is €(92-36) = €56 per household and €(71-36) = €35 per household for potential users. Overall, total benefit of the public works programme is found to range between €41 million (using median WTP) and €107 million (using mean WTP).

The authors also present the findings from a number of different models of WTP. Respondent WTP is found to increase with knowledge of St. Erasmo, current use of the Lagoon and expected use of the island once the public works programme is completed. WTP is also found to depend in predictable ways on income, educational attainment and age.

6. Comments

The study investigates methodological issues related to the provision of different levels of information to survey respondents. A split sample design was implemented, with one sub-sample presented with a reminder of possible reasons for voting in favour of the public works programme, and the other sub-sample simply receiving the 'standard' question. It was found that the reminder increased WTP among less educated respondents, but decrease WTP among more highly educated respondents.

7. Suitability for Value Transfer

Study provides estimated monetary benefit of the described public works programme, rather than estimate of value of cultural or even environmental worth of the Island of St. Erasmo. As heritage assets go, the island of St. Erasmo in the Lagoon of Venice is a particularly unique site, although the authors note that in comparison to other islands in the lagoon it has few historical features of note. Moreover, it is unclear as to whether the heritage aspect of the site is central to the valuation scenario in the study, which focuses on environmental and infrastructural improvements, the specifics of which are not provided.

8. Abstract

This paper reports on a contingent valuation (CV) study eliciting willingness to pay (WTP) for a public program for the preservation of lagoon, beach and infrastructure in the island of S. Erasmo in the Lagoon of Venice, Italy. The authors use split samples to investigate the effect of providing a summary of reasons for voting in favor and against the program before the referendum valuation question. Reminding respondents of the reasons for voting for or against the program increases WTP among less highly educated respondents, and decreases WTP among more highly educated respondents.

Bedate et al. (2004)

1. Study Reference

Bedate, A., Herrero, L.C. and Sanz, J.C. (2004) 'Economic valuation of the cultural heritage: application to four case studies in Spain', *Journal of Cultural Heritage*, 5, 1, 101-111.

2. Heritage Asset

This study considers the economic value of four different cultural goods in the Castilla y León region of northern Spain. Two of the goods may be defined as built heritage, the Cathedral of Palencia and the town of Uruena, a historic walled town. The other two goods are a cultural music event and the Museum of Burgos. Here, the summary focuses on the findings for the built heritage assets. The Cathedral of Palencia is an example of gothic design and was built during the 14th century. It is one of the most important monuments in Palancia and is characterised by the 'magnificence and gracefulness' of its architecture. The town of Urena, in the province of Valladoid, features city walls that date from the 13th and 14th centuries. The walls are well preserved and almost completely intact. The town also features a museum for traditional tools and musical instruments, which served as a sampling point for the surveys undertaken.

3. Economic valuation methodology

A zonal travel cost model was developed, with zones based upon bordering regions, non-bordering regions in central Spain, peripheral regions in Spain, and non Iberian peninsular regions (including the rest of Europe, but not Russia). Surveys were face-to-face with tourists and predominantly undertaken during the summer of 1998. For the town of Urena, tourists were interviewed at the town's museum (hence some bias may exist since tourists who visit the walls may not necessarily visit the museum). Overall 130 usable responses were collected at the town museum and 190 at the Cathedral of Palencia.

4. Valuation Scenario

The study sought to estimate the consumer surplus (use value) derived from visits to the heritage assets outlined above. The study focuses primarily on transportation costs (admittance charges to sites were considered to be zero), taking into account the round-trip cost, the length of the trip, and in the case of private vehicles the number of occupants. Visits per capita were derived for each zone, allowing the derivation of demand curves. Specifically tourists' marginal willingness to pay to access a site was estimated from plotting additional transport cost against the number of visits. The area under the demand curve corresponds to total consumer surplus accruing to visitors.

5. Valuation Results

Total consumer surplus estimate derived in the study are shown in Table 1 (included for completeness are all four sites that were valued). The study also calculates a potential price (admittance fee) for individual visits on the basis of the ratio of consumer surplus to the sample of visitors to each site. The researchers note that this value should be interpreted cautiously, particularly in relation to the sample size.

Table 1: Consumer Surplus Estimates

Heritage Asset	Total Consumer Surplus (€ 1998)	Sample size	Price (€ 1998)
Uruena (Walled town)	272.26	130	2.09
Cathedral of Palencia	712.20	190	3.75
Museum of Burgos	1171.97	294	3.98
Cultural music event	248.82	300	0.83

6. Comments

In general, the study finds that the expectation that increased distance and travel cost results in lower visitation rates is observed. Where this is not the case, the nature of the transport network and connections to certain regions is able to suggest a plausible explanation for the observed result.

The authors note that the travel cost models applied lack information concerning costs other than those incurred for transportation (e.g. expenses in terms of accommodation and meals). However, it is argued that visitors do not typically spend an entire day at a site, so such expenses could not be entirely attributed to the visit of interest.

Finally, the implied preference ranking of sites (on the basis of 'price') would appear to concur with expectations regarding their 'touristic' appeal. Overall, the Cathedral of Palencia was ranked second behind the Museum of Burgos, which is a well known site. The town of Uruena and the cultural music event are both lesser known assets.

7. Suitability for Value Transfer

The relatively small sample sizes would suggest the reliability of the values derived may be limited, however the authors do assert that the ordinal ranking of preferences between sites would concur with expectations. The suitability of the study is also limited since it provides estimates of the use value derived from visits to the heritage sites, rather than considering marginal changes in the quality of the sites. Finally it is also important to consider the extent to which estimates of economic value can be transferred between countries – for example, the walled town of Uruena is likely to significant on a local to regional scale within Castilla y León, but it is difficult to envisage that the results of the travel cost survey could be used in a non-Spanish context, where the underlying historical, cultural and social characteristics of 'comparable' heritage assets are likely to be significantly different.

8. Abstract

Heritage and culture are two important components of the leisure sector. This leads to the question of how such non-market goods may be valued. In this paper the authors have opted for the travel cost method, widely used in the valuation of natural assets, to estimate the demand curve. Using this method, it was possible to calculate the consumer surplus value of four different cultural goods or services in the Castilla y León region of Spain. The four cases studied included a cultural artistic event, a village comprising an historic ensemble, a museum located in a provincial capital and a cathedral representing an example of a historic monument.

Brown (2004a)

1. Study Reference

Brown, J. (2004), 'Economic Values and Cultural Heritage Conservation: Assessing the Use of Stated Preference Techniques for Measuring Changes in Visitor Welfare', Chapter 6, PhD Dissertation, Imperial College London.

This study is also reported in: Brown, J. and Mourato, S. (2002) 'Measuring the Cost of Congestion in Historic Properties: A Stated Preference Approach,' Paper presented at the 2nd World Congress of Environmental and Resource Economists, Monterey, June 24-27th.

2. Heritage Asset

The National Trust (NT) is one of the UK's leading independent conservation and environmental organisations, acting as a guardian for the nation in the acquisition and permanent preservation of places of historic interest and natural beauty. The Trust is the country's largest private owner of historic properties (21%), and has the largest share of visits (17%) to historic houses with an average of 43,193 visitors per property. There are currently over 300 NT owned historic properties open to the public for which an entrance fee is charged.

Chartwell, in Kent, which was the country home of Sir Winston Churchill (Britain's prime-minister during the second World War), is one of the most popular NT properties in England, with 144,224 visitors in the 2000/01 season (National Trust, 2001). The entry price for individual adult non-members in 2001 was £6.50. Displaying the property as a family home presents many management problems: congestion around the house frequently results in high levels of noise, destruction of the ambience of the property, inability of visitors to see many of the items on display, queues and general difficulty in moving around. In addition, the rate of damage to the fabric of the house through general wear and tear is accelerating.

3. Economic Valuation Methodology

Both contingent valuation (using randomised card sorting payment mechanisms) and choice experiments were used, in a split-sample procedure. In each method, two different measures of preferences for avoiding visitor congestion at Chartwell were calculated: one based on money values (willingness to pay, via a compulsory entry surcharge) and one based on time values (willingness to wait). In 2001, a random sample of 390 visitors was interviewed face-to-face at the Chartwell visitor centre, after their visit had taken place (183 respondents in the contingent valuation experiment and 207 in the choice experiment).

4. Valuation Scenario

In the contingent valuation study, respondents were first asked for their *willingness to pay (WTP)* to avoid congestion via a compulsory congestion surcharge (which would enable the property to stay open for longer on busy days). In addition, they were also asked for their *willingness to wait (WTW)*, that is, the maximum length of time they would be prepared to wait for a timed ticket slot to ensure that there was no congestion when they visited the house at Chartwell. Congestion was defined as having over 30 people in the house at any one time. A randomised card sorting payment mechanism was used in both cases: respondents were asked to sort cards with money (time) amounts into three groups: cards with amounts which they definitely would be willing to pay (wait); cards with amounts which they definitely would not be willing to pay (wait); and cards with amounts which they would be uncertain about paying (waiting) or not.

In the choice experiment study, respondents were asked to reveal their preferences for a series of scenarios representing trade-offs between different levels of congestion (number of visitors), waiting times (for a timed-ticket slot) and prices (entry surcharges) at Chartwell. Each respondent was asked to choose their most preferred option from each of five choice sets, each containing the current situation and two alternatives scenarios.

5. Valuation Results

The results show that 48% of the sample was male and the average age was 56 years. Visitors were found to be well educated, with the majority having had at least secondary education and nearly a third having a first or higher degree, well above the UK national average. Half the sample was in paid employment, with about 45% being retired. Mean annual household income before tax was found to be £34,000, greater than national and regional averages. NT members accounted for 79% of respondents. Nearly half the NT members surveyed had visited Chartwell before, compared with 30% of non-members. Some 79% of respondents stated that their visit had been 'very enjoyable'. Notably, only 17% of respondents actually regarded the property as being congested.

In the contingent valuation experiment, around 63% of respondents stated a positive WTP to avoid congestion at Chartwell, with 37% stating a zero WTP (protest zeros accounted for 34% of the sample). After removal of protest responses, mean WTP was £2.68 (median £2.00). In contrast, only two respondents (both protests, 1% of the sample) stated they were not willing to wait for a timed ticket slot to ensure there would be no congestion during their visit to the house at Chartwell. Average WTW (without protests) was 59 minutes (median 60 min). Income was a significant and positive determinant of both WTP and WTW.

In the choice experiment, 46% of respondents revealed a zero WTP, with protests accounting for 36% of the sample. The conditional logit model ran on the choice data (non-protest responses only) showed that all attributes (congestion, waiting time, price) were significant with the correct negative signs. Table 1 contains the estimates of marginal WTP and WTW and the value of waiting time inferred from the choice data.

Table 1: Trade-offs between congestion, waiting time and money (from choice experiment)

WTP to have one less person in the house	£0.103 (0.092 - 0.116)
WTP to avoid congestion (30 less people in the house)	£3.084 (2.754 - 3.472)
WTW to have one less person in the house	3.407 min (2.743 - 4.308)
WTW to avoid congestion (30 less people in the house)	102.218 min (84.352 - 127.910)
WTP to avoid waiting an extra minute (value of one minute)	£0.030 (0.025 - 0.036)
WTP to avoid waiting an extra hour (value of one hour)	£1.810 (1.470 - 2.147)

Notes: 95% confidence intervals in parenthesis

Table 2 summarises and compares all the welfare measures estimated in the contingent valuation and the choice experiment studies.

Table 2: Summary of mean WTP and WTW measures from both valuation methods

	WTP to avoid congestion	WTW to avoid congestion (in minutes)	WTW to avoid congestion (translated into £*)
Contingent valuation	£2.79 (1.96 – 2.49)	58.58 min (53.77 - 63.39)	£1.75 (1.61 – 1.90)
Choice experiments	£3.08 (2.75 - 3.47)	102.22 min (84.35 - 127.91)	£3.07 (2.53 - 3.84)

Notes: *using £0.03 obtained from the choice experiment as the value of 1min of leisure time

6. Comments

The proportion of protests was almost identical across the two WTP survey types (34% in the contingent valuation and 36% in choice experiment). This contradicts expectations raised in the literature regarding the possible superiority of choice experiments over contingent valuation in terms of potential to reduce protest rates due to an indirect elicitation of maximum WTP and a

reduced focus on the price attribute. Remarkably, the use of time as a value unit seemed to have almost eliminated the problem of protests.

The estimates of WTP to avoid congestion were not statistically different between valuation methods. In contrast, WTW estimates did not converge across methods, with choice experiments giving rise to a higher estimate of the time people were prepared to wait to avoid congestion. After translating the WTW amounts into money terms (using the value of time calculated from the choice experiment), it was found that in the choice experiment using money or time units resulted in identical values to avoid congestion; while in the contingent valuation treatment significant differences arose between the two approaches, with the time approach resulting in lower estimates of the benefits of avoiding congestion.

A general caveat of this study is the fact that the outbreak across England of the foot and mouth epidemic in February 2001 might have changed visitor patterns to NT properties and hence, the generalization potential of these results.

7. Suitability for Value Transfer

The transfer potential of the congestion costs estimated in this study is likely to be limited to:

- NT properties or other properties under similar ownership schemes. This is because NT members do not pay to enter Chartwell and this is likely to have an effect on elicited willingness to pay values;
- similar properties, that is historical properties with a house and a garden. This is important as people can visit the garden while waiting for their entry time slot in the house;
- properties with similar levels of congestion, as it will be unreliable to extrapolate beyond the levels considered in this study.

8. Abstract

This study investigated and compared different ways of measuring the costs of congestion at a National Trust property: Chartwell in Kent, UK. Using parallel contingent valuation and choice experiment surveys, the study estimated the effects of congestion on the welfare of visitors; compared the performance of alternative methodological approaches and value units (money and time) in terms of overall WTP values; and assessed which methodology and which value unit minimised protest responses and increased levels of certainty in stated values.

Brown (2004b)

1. Study Reference

Brown, J. (2004), 'Economic Values and Cultural Heritage Conservation: Assessing the Use of Stated Preference Techniques for Measuring Changes in Visitor Welfare', Chapter 7, PhD Dissertation, Imperial College London.

2. Heritage Asset

The National Trust (NT) is one of the UK's leading independent conservation and environmental organisations, acting as a guardian for the nation in the acquisition and permanent preservation of places of historic interest and natural beauty. The Trust is the country's largest private owner of historic properties (21%), and has the largest share of visits (17%) to historic houses with an average of 43,193 visitors per property. There are currently over 300 NT owned historic properties open to the public for which an entrance fee is charged.

Upton House, near Banbury, Warwickshire was the home of Sir Walter Samuel, 2nd Viscount Bearsted, who was Chairman of Shell Transport and Trading Co. from 1921-1946 and son of the company founder. The house itself dates from 1695, but was remodelled by the Viscount in the 1920s to house his outstanding collection of English and continental old master paintings, including works by Hogarth, Stubbs, Canaletto, Guardi, Brueghel and El Greco; tapestries; French porcelain; Chelsea figures and 18th century furniture. Upton House was left to the NT with an endowment but is currently operating at a substantial financial deficit of about £60,000 per year. This is partly attributed to falling visitor numbers (currently, an average of 47,000 visitors each year), which have been falling since their peak during the 1995 centenary year. Entrance fees in 2002 were £6.00 per adult non-member for the house and garden and £3.00 for entrance to the garden only. Although there is an ongoing conservation programme at Upton to return both the house and gardens to their 1920s appearance, there is a significant backlog of conservation and general property maintenance work. For conservation reasons, no photography is allowed in the house and restrictions in access hours are in place (4 hours a day, 5 days a week, during 7-month opening season).

3. Economic Valuation Methodology

Both contingent valuation (using a randomised card sorting payment mechanism) and choice experiments were used, in a split-sample procedure. A random sample of 370 post visit surveys were carried out, face-to-face, at Upton House in 2001 (187 respondents in the contingent valuation experiment and 183 in the choice experiment). A voluntary donation was used as the payment mechanism.

4. Valuation Scenario

In the contingent valuation study, respondents were asked for their willingness to pay (WTP) for an improvement in the condition of the Upton House collections (described as being currently deteriorating due to lack of appropriate cleaning and restoration work), when full access was allowed to them. A voluntary donation was used as the payment mechanism. A randomised card sorting payment mechanism was used: respondents were asked to sort cards with money amounts into three groups: cards with amounts which they definitely would be willing to donate; cards with amounts which they definitely would not be willing to donate; and cards with amounts which they would be uncertain about donating or not. A follow-up certainty question was also asked after the valuation exercise.

In the choice experiment study, respondents were asked to reveal their preferences for a series of scenarios representing trade-offs between different levels of access (proportion of collections open to the public), condition of the art collections (deteriorated, maintained, improved) and requested donation amounts at Upton. Each respondent was asked to choose their most preferred option from each of five choice sets, each containing the current situation and two alternatives scenarios.

5. Valuation Results

The results show that 46% of the sample was male and the average age was 57 years. Visitors were found to be well educated, with the majority having had at least secondary education and nearly a third having a first or higher degree, well above the UK national average. Just under half the sample was in paid employment, with about 45% being retired. Mean annual household income before tax was found to be £33,000, greater than national and regional averages. NT members accounted for 92% of the sample. Only 28% of respondents had previously visited Upton, with no significant difference in visitation rates between members and non-members. Some 61% of respondents stated that their visit had been 'very enjoyable', while 94% rated the quality of the art collections as 'good' or 'very good'. In contrast, 41% of respondents indicated 'average' or 'below average' ratings for the suitability of opening times and days.

In the contingent valuation experiment, 85% of respondents stated a positive WTP for an improvement in the condition of the collections at Upton, while 15% stated zero WTP (protest zeros accounted for 11% of the sample). After removal of protest responses, mean WTP was £6.14 (median £5.00). For those respondents who were at least 75% sure of their answers (about 70% of the sample) mean WTP was very similar at £6.46 (median £5.00); previous literature suggested that a 75% certainty 'cut-off' was a fairly accurate determinant of actual WTP intent when voluntary contributions were used. Income was found to be the main determinant of WTP.

In the choice experiment, 81% of responses were valid, non-protest choices. The conditional logit model ran on the choice data (non-protest responses only) showed that all attributes (condition, access, donation) were significant with the correct signs. Table 1 contains the 'best' estimates of marginal WTP for conservation and access inferred from the choice data.

Table 1: Trade-offs between condition of collections, access and money (from choice experiment)

WTP to conserve collections (per unit of improvement)	£1.84 (0.64 – 2.63)
WTP to maintain condition of collections (baseline: deterioration)	£1.84 (0.64 – 2.63)
WTP to improve condition of collections (baseline: deterioration)	£3.68 (1.27 – 5.27)
WTP to prevent 1% reduction in access	£0.045 (0.024 – 0.063)
Willingness to trade off levels of access for conservation	40.5% (19.23 – 55.37)

Notes: 95% confidence intervals in parenthesis

Table 2 summarises and compares the estimates of WTP for improving the condition of collections at Upton, resulting from both methods.

Table 2: Summary of mean WTP measures for improved conservation from both valuation methods

	Mean WTP (£) (confidence levels)
Contingent valuation (excluding protests)	6.14 (5.29 – 6.99)
Contingent valuation (excluding protests & 75% certainty)	6.46 (5.34 – 7.58)
Choice experiments (excluding protests)	3.68 (1.27 – 5.27)

6. Comments

Results from both contingent valuation and choice experiment surveys indicate that the majority of respondents were willing to donate money to conserve the art collections at Upton, even though they considered the current quality of the collections to be 'good' or 'very good'. But the estimates for WTP were found to be statistically different between contingent valuation and choice experiments, which indicates a lack of convergent validity. Respondents also seemed willing to trade-off substantial levels of access for increased conservation. Thus, a large proportion of the value associated with the collections at Upton House is likely to be linked to conservation benefits (mostly option and non-use values), reflecting more than just the user benefits associated with access.

One limitation of the choice experiment results is that the 'condition of collections' attribute was expressed numerically in a linear fashion (1, 2, 3), rather than modelled qualitatively, using dummy variables (deteriorate, maintain, improve). Moreover, a general caveat of this study is the fact that the outbreak across England of the foot and mouth epidemic in February 2001 might have changed visitor patterns to NT properties and hence, the generalization potential of these results.

7. Suitability for Value Transfer

The transfer potential of the conservation and access benefits estimated in this study is likely to be small. This is because of the distinguishing characteristics of the asset being valued (a NT house and garden property, with important art collections, in need of conservation work and where there is a trade-off between access and conservation) and the vague way in which the current and proposed condition of the collections was defined.

8. Abstract

In this study, choice experiments were used to investigate visitor preferences for the conservation of and access to art collections at a National Trust property: Upton House in Warwickshire, UK. The trade-offs that people were willing to make between different levels of access, the condition of the art collections and the requested donation amounts were estimated and the potential of choice experiments as a tool for modelling complex choice situations was assessed in the context of heritage resource valuation. Preferences were measured via a voluntary payment mechanism, adjusted for uncertainty, and the convergent validity of choice experiments were tested using a parallel contingent valuation survey.

Brown (2004c)

1. Study Reference

Brown, J. (2004), 'Economic Values and Cultural Heritage Conservation: Assessing the Use of Stated Preference Techniques for Measuring Changes in Visitor Welfare', Chapter 8, PhD Dissertation, Imperial College London.

2. Heritage Asset

The National Trust (NT) is one of the UK's leading independent conservation and environmental organisations, acting as a guardian for the nation in the acquisition and permanent preservation of places of historic interest and natural beauty. The Trust is the country's largest private owner of historic properties (21%), and has the largest share of visits (17%) to historic houses with an average of 43,193 visitors per property. There are currently over 300 NT owned historic properties open to the public for which an entrance fee is charged.

This study focuses on three different (but similar) historical NT properties in the UK: Chartwell, in Kent; Upton House in Warwickshire; and Stourhead on the Wiltshire/Dorset border. The properties were selected for the study on the basis that they were all major country house estates situated in rural England, each of which shared similar general characteristics (historic house, art collections, gardens, visitor facilities). However, as it happens with most historic properties, certain features are specific to each property. For example, Chartwell is best known for its association with Sir Winston Churchill and the house is evocative of his life and career; whereas Stourhead is famous because of its internationally regarded landscaped gardens; and Upton has a unique and important collection of grand master paintings, French porcelain and tapestries.

3. Economic Valuation Methodology

An identical choice experiment survey was administered in 2001 to the visitor populations of the three National Trust properties: Chartwell; Upton House; and Stourhead. A random sample of 933 post visit face-to-face interviews were carried out in total: 399 in Chartwell, 387 in Upton and 147 in Stourhead. The aim was to test the transferability of property attribute values across visitor populations.

4. Valuation Scenario

A series of hypothetical properties, with a number of attributes provided for at specified levels, were presented to respondents and estimates of visitor preferences for these 'generic' property attributes were obtained for each survey group. All three studies used the same set of attributes and provision levels. More specifically, six different attributes were used: gardens or parkland (yes/no); architectural style of the house (characteristic of a specific period or style/not characteristic); art collections (unique/standard); association with a famous person (yes/no); visitor facilities (basic/comprehensive); and time to get to the property (45mins, 1hr 20mins, 2hrs 35mins). The travel time/distance attribute was included as a proxy for price. Each respondent was asked to choose their most preferred option from each of five choice sets, each containing three alternative scenarios (no baseline option was included in the choice sets as there was no obvious current situation).

5. Valuation Results

The results show that 47% of the total sample was male and the average age was 56 years. Visitors were found to be well educated, with the majority having had at least secondary education and nearly a third having a first or higher degree, well above the UK national average. Half the sample was in paid employment, with about 44% being retired. Mean annual household income before tax was found to be £33,000, greater than national average. NT members accounted for 85% of the sample. Overall, sample statistics corresponded closely to national NT visitor statistics. Finally, of importance to benefits transfer, the Chartwell, Upton and Stourhead sub-samples were very similar in all variables with the exception of mean age, which was significantly lower in Stourhead (53

years). However, there was considerable variation across properties in terms of the attributes that respondents found most enjoyable during their visit. Some 91% of Stourhead respondents stated that they enjoyed the gardens the most; 67% of Upton respondents stated that they enjoyed the collections the most; while 43% of the Chartwell sample enjoyed the historical association of the property. These differences may create problems for the transferability of attribute values across visitor populations.

The conditional logit model ran on the choice data for all three sub-samples showed that all attributes were significant with the expected positive (garden, house, collections, association and facilities) or negative (travel time) signs. The exception was the Stourhead data where facilities and association were not statistically significant (see Table 1). Further analysis revealed a general insignificance of socio-economic variables as determinants of choice.

Table 1: Conditional logit model results for the three populations (attributes only)

Attributes	**Chartwell**	**Upton**	**Stourhead**
	Coefficient (standard error)	Coefficient (standard error)	Coefficient (standard error)
Garden	1.841*** (0.071)	1.741*** (0.070)	2.200*** (0.130)
House	0.918*** (0.068)	0.894*** (0.068)	0.659*** (0.116)
Collections	0.737*** (0.071)	0.962*** (0.072)	0.678*** (0.120)
Association	0.608*** (0.719)	0.333*** (0.070)	0.122 (0.123)
Facilities	0.323*** (0.064)	0.250*** (0.064)	0.068 (0.107)
Price	-0.002*** (0.000)	-0.002*** (0.000)	-0.003*** (0.000)
N observations	5949	5745	2187
Pseudo R2	0.266	0.251	0.316
Log likelihood	-1598.924	-1575.536	-545.834

Notes: *** significant at 1% level; ** significant at 5% level, *significant at 10% level. Price is the travel-cost to get to property (calculated from original travel time attribute).

Implicit prices for all property attributes, calculated in each location, are depicted in Table 2. Undisputedly, the presence of gardens is the feature of a historic property that visitors most valued.

Table 2: Implicit prices across populations

	Garden	**House**	**Collections**	**Association**	**Facilities**
Chartwell	£9.02 (7.67-11.12)	£4.50 (3.62-5.80)	£3.61 (2.77-4.64)	£2.98 (2.15-3.80)	£1.58 (0.92-2.51)
Upton	£9.39 (7.84-11.78)	£4.82 (3.87-6.40)	£5.19 (4.13-6.60)	£1.80 (0.82-2.66)	£1.35 (0.59-2.29)
Stourhead	£8.66 (6.74-11.24)	£2.59 (1.47-3.96)	£2.67 (1.43-3.85)	£0.48 (-0.66-1.58)	£0.27 (-0.94-1.18)

Notes: 95% confidence intervals in parenthesis

Table 3 reports total welfare estimates for 4 hypothetical property descriptions, using the implicit prices calculated for each of the three sub-samples.

Table 3: Estimates of compensating surplus for different property scenarios

Attributes	Property A	Property B	Property C	Property D
Garden	Garden or parkland	Garden or parkland	Garden or parkland	No garden/ parkland
House	Characteristic of a specific style	Not characteristic	Characteristic of a specific style	Characteristic of a specific style
Collections	Unique/rare	Unique/rare	Standard	Unique/rare
Association	Yes	No	No	Yes
Facilities	Licensed restaurant/ large NT shop/ visitor centre/ toilets/ baby changing	Licensed restaurant/ large NT shop/ visitor centre/ toilets/ baby changing	Basic tea room/ small NT shop/ toilets/ baby changing	Licensed restaurant/ large NT shop/ visitor centre/ toilets/ baby changing
Chartwell	£21.69 (18.43 - 26.07)	£14.21 (11.97 - 17.91)	£13.52 (11.54 - 16.70)	£12.67 (10.67 - 15.51)
Upton	£22.54 (18.96 - 29.09)	£15.92 (13.32 - 20.35)	£14.21 (12.08 - 18.15)	£13.15 (10.67 - 16.56)
Stourhead	£14.67 (10.81 - 19.21)	£11.60 (8.68 –14.76)	£11.25 (8.55 – 14.99)	£6.01 (3.54 - 8.13)

Note: 95% confidence levels in parenthesis.

6. Comments

Three different benefits transfer tests were used:

- Tests of equality of overall models across populations: likelihood ratio tests performed on the models in Table 1 conclude that they are not equivalent overall. Furthermore, adding socio-economic and attitudinal variables to the models did not improve transferability across populations.

- Tests of equivalence of implicit prices across populations: results are mixed with the null hypothesis of equivalence of implicit prices not being rejected in 9 out of 15 cases. Only the implicit prices for the 'garden' attribute are equivalent across all three populations suggesting that transfer errors may vary inversely with the importance attached to an attribute. The WTP for the other attributes are significantly different across some of the populations but not others. The Upton/Chartwell comparison fares best in terms of transferability with implicit prices equivalent for four out of five attributes.

- Tests of equivalence of total welfare measures (estimates of compensating surplus) across populations: transferability results are mixed (although more positive than previous tests) with welfare estimates being statistically equivalent in 8 out of 12 cases. However, the 4 cases where values are different all involve Stourhead (where the sample size was small and two attributes were not significantly different from zero).

Overall, transfer errors of the welfare estimates ranged from 3.65% to 110.8%, with the comparisons involving Stourhead explaining the higher range of this interval. This provides some indication for policy-makers about the errors that might be experienced when transferring estimates of compensating surplus of historical property benefits using choice experiments: the lower end of this range is likely to be acceptable for most policy applications. In terms of caveats, the relatively small sample size at Stourhead is likely to have influenced the results: transfer errors were much smaller between the other two properties.

7. Suitability for Value Transfer

This study is unique in the cultural heritage valuation literature in that it was specifically designed to test transferability of values of historical properties across populations. It can therefore be used to test transferability of the visitor benefits associated with historical properties and their attributes, provided similar types of properties are used. Although statistically significant differences were found between several benefit estimates, the magnitude of the transfer errors in most cases is likely to be acceptable for many policy applications.

8. Abstract

This study assessed the validity of using values derived from choice experiments for benefits transfer in the context of cultural heritage resources. Tests of transferability of results from attribute-based valuation methods are rare and none has previously been done in the context of cultural resources. Specifically, the study examined the validity of transferring heritage values across visitor populations of three similar historical properties in the UK, in order to test if different visitor groups have the same preferences for the same property attributes. Tests of equality of overall models, implicit prices and total welfare estimates were performed.

Boxall et al. (2002)

1. Study Reference

Boxall, P., Englin, J. and Adamowicz, W. (2002), The contribution of aboriginal rock paintings to wilderness recreation values in North America , Chapter 8 in Navrud and Ready (2002).

This study is also reported in: Boxall, P.C., Englin, J. and Adamowicz, W.L. (2003) 'Valuing aboriginal artifacts: A combined revealed-stated preference approach', *Journal of Environmental Economics and Management*, 45(2): 213-230.

2. Heritage Asset

The study concerns Native American rock pictographs in the Precambrian Shield region in central Canada. The pictographs take the form of handprints, human figures, animals and abstract symbols, and are thought to have had spiritual significance to the local native people and links to shamanism. They are assumed to represent information communicated to the observer and hence are not necessarily artworks. Some of the pictographs are thought to be about 2000 years old. They are still being discovered, and it is likely that many will remain undetected. However, there are some concerns over degradation from weathering, changing water levels and vandalism. The park used in the valuation scenario, Nopiming in Manitoba, does not contain any known pictographs, but is near wilderness areas which do.

3. Economic valuation methodology

The study uses contingent behaviour analysis. This method presents respondents with a scenario which it is hypothesised would prompt a behavioural change (such as increased consumption of a good) from them. The value of the scenario is then inferred from their stated change using values calculated for the good by the travel cost method, hedonic pricing or some other valuation method. A postal survey was conducted amongst leaders of wilderness canoeing trips to the Nopiming Park, originating from five Canadian provinces and three US states.

4. Valuation Scenario

Respondents are asked how many more trips they would take to canoe in Nopiming Park if the park contained an accessible aboriginal pictograph, shown to them in a photograph. This was then compared to their actual trip numbers, and their travel costs used to derive a valuation figure. Respondents were also asked whether they would switch their route to see a known pictograph (if they were already on a trip) and whether they would switch their route to see a vandalized pictograph. The analysis of these last two scenarios is not presented in this study, but is addressed in Boxall et al. (2003).

5. Valuation Results

Three hundred and fifty fully completed questionnaires were returned. Seeing rock paintings was highly rated as a factor that would affect the enjoyment of a canoeing trip, along with seeing wildlife. The consumer surplus estimate for visiting Nopiming was found to be $1,007 (Canadian dollars, year unspecified) per trip per group, or $250 per trip per person. The presence of the pictograph would generate an average increase in trips of 0.71 per individual. Multiplying this figure by the consumer surplus per individual gives a value of the pictograph as $177 per person. Some characteristics of the sample are given as follows:

Table 1: Sample characteristics

Female	18%
Expertise in canoeing:	
Beginner	17%
Intermediate	67%
Advanced	16%
Mean age	37
Mean travel costs	$142
Mean no trips without pictograph	4.16
Mean no trips with pictograph	4.87

Trip numbers were modelled by a log-linear model, with the results in Table 2.

Table 2: Valuation analysis results

Variable	Coefficient	Standard error
Intercept	1.212	0.09
Travel cost	-0.001	1.8 E-4
Pictograph present (dummy)	0.215	0.07
Is a beginner canoeist (dummy)	-0.475	0.10
Is female (dummy)	0.376	0.09

Notes: All coefficients are significant at the 5% level.

6. Comments

The method of estimating travel cost makes an assumption that the opportunity cost of time spent travelling to the destination is a quarter of the individual's income. This may not be valid. Extending the average travel cost to other individuals in the leader's group assumes that these individuals earn on average the same as the group leader, which may not be true.

7. Suitability for Value Transfer

The cultural asset in question in this study is a fairly special case, although similar native rock art presumably exists in the Americas. The rock art is not as spectacular as some examples of Australian aboriginal art or European cave paintings. In addition the study only covers use value of non-aboriginal people and the rock art is fairly inaccessible and can only really be reached by canoeing (and possibly by hiking, although this is not mentioned). More accessible rock art would presumably have higher use value.

8. Abstract

The authors examine the influence of aboriginal rock paintings on visitation levels to wilderness areas in the Precambrian Shield region in central Canada. They report results from a survey of wilderness canoeists, in which the hypothetical presence of pictographs in a park in the Canadian province of Manitoba was presented. The influence of hypothetical pictographs on the number of visits to the park is assessed in a contingent behaviour analysis. The results confirm that pictographs generate considerable recreation benefits to non-aboriginal people and that aboriginal rock art is a valued aspect of wilderness recreation in Canadian Shield waterways.

Carson et al. (2002)

1. Study Reference

Carson, R.T., Mitchell, R.C. and Conaway, M.B. (2002), 'Economic benefits to foreigners visiting Morocco accruing from the rehabilitation of the Fes Medina', Chapter 9 in Navrud and Ready (2002).

This study is also reported in: Carson, R.T., Mitchell, R.C., Conaway, M.B. and Navrud, S. (1997) *'Non-Moroccan Values for Rehabilitating the FES Medina'*, Report to the World Bank on the FES Cultural Heritage Rehabilitation Project, August 1997.

2. Heritage Asset

The Fes Medina is the oldest part of the city of Fes in northern Morocco. The medina was founded in the late 8th or early 9th century, while more modern parts are 13th or 14th century. The medina contains the oldest mosque in North Africa, the oldest university in the world (an Islamic university founded in 859), as well as palaces, the old Jewish quarter, other mosques, hundreds of small shops and workshops and thousands of traditional houses. Fes was formally the political capital of Morocco, and still retains the status of a major cultural and spiritual centre for Moroccans. The Fes Medina is recognised as a World Heritage Site by UNESCO. However, many buildings in the medina are in some need of much repair and restoration work, and the medina as a whole needs huge investment if it is to be preserved. Fes attracts approximately 160,000 over-night foreign visitors a year.

3. Economic valuation methodology

The study applies the contingent valuation method using a dichotomous choice WTP question and face-to-face interviews. The sample consisted of three sub-samples of foreign visitors: 400 in Fes itself, 120 in Casablanca and 80 in Tangier. Hotels to target were picked at random and French or English-speaking guests within these hotels were also picked at random. There were three forms of the survey used: one for respondents in Fes (Form 1), one for respondents outside Fes who had been there or intended to visit there (Form 2), and one for respondents outside Fes who had not been there and did not intend to visit (Form 3). Each form had six stated price amounts used equally and randomly (these were lower for Form 3).

4. Valuation Scenario

Respondents were asked if they would still come to Fes/Morocco if they had to contribute towards a plan which would (1) "repair and clean up buildings, streets, sewers, public spaces and monuments"; (2) preserve the Medina's traditional character for future generations; and (3) ensure the Medina continues to be a "productive and vibrant living city". For Forms 1 and 2, respondents are told that this would be paid for by a special fee paid on registering at a hotel; for Form 3 by a special departure fee on all visitors leaving Morocco.

5. Valuation Results

Four hundred and seventy one valid responses were gathered from people either in Fes, intending to visit Fes or who had visited Fes ("Fes visitors"), and 126 visitors who had never visited and did not intend to visit Fes ("Non-Fes visitors"). The estimated mean WTP for the former group was US$70 (year unspecified), while in the latter group it was US$31[2]. Seventeen percent of Fes visitors were not willing even to pay the lowest fee amount (US$5), and 19% of non-Fes visitors were not willing to pay their lowest amount (US$2.50).

Aggregate WTP was calculated by multiplying the mean Fes visitors' WTP by the estimated number of adult visitors to Fes in 1996, giving US$11,233,000; and by multiplying the Non-Fes visitors' WTP

[2] These estimates are the Turnbull lower bound on mean WTP. These are the figures used in the aggregation. Two other estimates of mean WTP are made for each group, but are not reported here.

by the total number of adult visitors to Morocco in 1996 minus the number visiting Fes (US$46,880,000). This gives a total aggregate WTP of US$58,113,000 per annum.

The probability of accepting the presented amount was tested (separately for Fes and Non-Fes visitors) using probit models with the results presented in Table 1. All coefficients are "quite significant" (although the last only at the 10% level) and have the expected sign. Other variables such as age, sex and number of days spent in Fes did not affect WTP.

Table 1: Function explaining the probability of a respondent stating a positive WTP

Variable	Fes visitors		Non-Fes visitors	
	Coefficient	Standard error	Coefficient	Standard error
Intercept	1.27	0.32	1.10	0.34
Log of payment level	-0.55	0.06	-0.56	0.11
Is in top quintile of earners in home country (dummy)	0.40	0.15	0.72	0.28
Staying in four or five star hotel (dummy)	0.35	0.17		
Is holidaying alone (dummy)	-0.27	0.15		
Went to university (dummy)	0.38	0.14		
Resident of France or Spain (dummy)	-0.36	0.16		
Has previously visited Morocco			0.48	0.26
Will visit one of the other imperial cities (e.g. Marrakesh)			0.38	0.27
	Pseudo-R^2 = 0.262		Pseudo-R^2 = 0.253	

6. Comments

The authors note that the number of visitors per year could be a random number, and that use of an average visitor number in aggregation would have been preferable; furthermore, improvement of the Fes Medina could attract even more visitors. The exclusion of visitors who don't speak either French or English may lead to a small downward bias (as the econometric analysis indicates that French visitors have a lower WTP). The analysis also excludes visitors who visit Fes for the day or less well-off visitors who stay in backpacker hostels. The Non-Fes visitors did not include any respondents who were staying in less than a three-star hotel.

Treatment of possible protest bids is not discussed – it is not clear whether they are excluded from the sample.

The result that nearly a fifth of Non-Fes respondents would be put off from visiting Morocco by a tiny ($2.50) tourist tax should perhaps be treated with some scepticism; possibly a greater number of these were protest bids than the study acknowledges.

7. Suitability for Value Transfer

While the valuation scenario is not particularly well-specified, the study could potentially be useful for value transfer to other old cities in North Africa and the Middle East, particularly the other Imperial Cities in Morocco. Although as the former capital Fes may have particular significance for Moroccans, this is not likely to be as important for foreign visitors. It should be considered whether some cities are more likely to attract foreign visitors with lower or higher income than the sample for this study, particularly as this study only involved French or English-speaking foreigners.

8. Abstract

This study, undertaken for the World Bank, measured some of the economic benefits from a proposed project to preserve and restore the Fes Medina, a World Heritage Site. It focused on the benefits to foreigners visiting Fes and to foreigners visiting Morocco but not visiting Fes. The economic benefits were measured using three contingent valuation questionnaires which were administered in Fes, Casablanca and Tangier. The design, development, and administration of these survey instruments are described, and the data analyses for the two groups of foreign visitors are

presented separately. The sample mean for the Fes visitors was $70; the related aggregate estimate for the estimated number of adult visitors to Fes who stayed overnight in a Fes hotel was $11,233,000. Similarly, the Turnbull lower bound on the sample mean for visitors to Morocco who did not visit Fes was $31; the related aggregate estimate for the estimated number of adult visitors who stayed overnight in a Moroccan hotel but did not visit Fes was $46,880,000.

Chambers et al. (1996)

1. Study Reference

Chambers, C.M., Chambers, P.E. and Whitehead, J.C. (1996), 'Contingent Valuation of Quasi-Public Goods: Validity, Reliability, and Application to Valuing a Historic Site, East Carolina University', *Department of Economics 1996 Working Papers*.

This study is also reported in: Chambers, C.M., Chambers, P.E and Whitehead, J.C. (1998) 'Contingent Valuation of Quasi-Public Goods: Validity, Reliability, and Application to Valuing a Historic Site', *Public Finance Review*, 26: 137-154.

2. Heritage Asset

The cultural asset in question is the St. Genevieve Academy, Missouri. St. Genevieve is a former French colonial village founded in 1750, and the first permanent settlement in the state. The Academy was built between 1808-1810, making it one of the oldest buildings west of the Mississippi River. At the time of writing, the state owned the building. The building is listed on the US National Register of Historic Places.

3. Economic valuation methodology

The study employs a postal contingent valuation survey using a payment ladder elicitation format. The survey contacted equal random samples of respondents in a large urban area (St. Louis) and a rural area (Warrensburg), both of which are in Missouri but fairly distant from the site.

4. Valuation Scenario

Respondents were asked how much their household would be willing to pay as a one-off donation to a voluntary fund to preserve the St. Genevieve Academy against a scenario where the Academy is sold to private owners for conversion to a bed-and-breakfast.

5. Valuation Results

Expected WTP was estimated to be $5.07-6.48 per household (1993 $), depending on method of estimation. Sixty-nine percent of valid responses expressed a zero WTP for the Academy, indicating a high level of indifference towards the good. The demographic profile of the sample is summarised in Table 1 and the econometric analysis (using a tobit model of WTP) in Table 2.

Table 1: Socio-economic characteristics of the sample

Male	61%
Female	39%
Mean age	44.8
Mean household income	$36,200
Mean time spent in education (years)	14.9
Mean family size	2.7

Table 2: Econometric analysis of WTP

Variable	Parameter estimate	t-statistic
Intercept	-27.3	1.5
Income	2.0 E-04	2.2
Gender	-11.8	2.6
Age	5.1 E-03	0.04
Education (years)	1.3	1.3
Family size	-3.1	1.7
Expresses concern about the proposed change	19.7	4.0

The coefficients on income, gender and expressed concern are all significant at the 5% level. Interestingly, women are substantially likelier to express a higher WTP than men. Age, educational level and family size do not appear to affect WTP.

The results were aggregated by multiplying the mean WTP estimates by the population of the state of Missouri, after weighting the results of the different sub-samples to reflect the proportion of urban and rural residents in the state. The WTP values of those who did not response to the survey were estimated at zero and the mean WTP estimates adjusted accordingly, in order to eliminate self-selection bias; this resulted in a conservative value for aggregate WTP. Despite the high level of indifference to the Academy, the aggregate value was estimated at $0.86-1.1 million; at the 95% confidence interval this range becomes $0.56-1.27 million. This is substantially less than the revenues from a potential sale of the property.

6. Comments

The WTP survey indicates a heavy non-use component in responses, as only 8% of respondents had ever seen the Academy. The valuation scenario perhaps leads to an under-estimation of the true WTP for the good; some respondents commented that they were not willing to pay to preserve as they believed that the conversion to a bed-and-breakfast would not change the appearance of the building very much. However, as destruction or neglect of the building is not being considered (as it is a listed building), it is nevertheless a reasonable valuation scenario.

Ten percent of returned responses were identified as protest zeros through a question asking for the reason for a zero WTP. Reasons included: "I do not think the money will be used for the project" and "I do not like these kind of questions". Given an overall response rate of 51% and an initial sample size of 305, the sample used is rather smaller than would be ideal. The significant coefficient on income indicates consistency with economic expectations, and the positive effect of expressed concern on WTP provides a further internal consistency test.

7. Suitability for Value Transfer

The cultural good in question is rather unique, as there can only be one "first permanent settlement in Missouri". It is possible that the study could be used to transfer value to other buildings of similar age and style in the southern United States.

8. Abstract

This paper employs the contingent valuation method to measure the non-market value of preservation of the St. Genevieve Academy in Missouri, a quasi-public good. This study represents a new application of the contingent valuation method featuring a historical resource. As such, we explore the validity and reliability of this application of the method. Construct validity tests based on economic theory and the reliability test of internal consistency are conducted. We find evidence that the contingent valuation method can be a useful approach to measuring the non-market value of quasi-public goods such as historical resources. We also illustrate how the contingent valuation method can be used for policy analysis of preservation of historical sites.

Del Saz Salazar and Marques (2005)

1. Study Reference

Del Saz Salazar, S. and Marques, J. (2005) 'Valuing cultural heritage: the social benefits of restoring an old Arab tower', *Journal of Cultural Heritage*, 6:69-77

2. Heritage Asset

The asset in question is an Arab tower in Godella, a small town near Valencia, Spain. The tower was one of a network of watch towers constructed during Arab rule of southern Spain, and was most probably constructed between the 10th and 13th centuries. However, due to a lack of protection, the tower was destroyed in the 1960s/70s, its stones appropriated by local residents, and it is now little more than a small pile of rubble. The study explores the possibility of rebuilding the tower to a state similar to that before destruction.

3. Economic valuation methodology

The study employs the contingent valuation method using face-to-face interviews with a random sample of local residents. The dichotomous choice (with four bid levels) and open-ended elicitation formats are both used.

4. Valuation Scenario

The survey asked for respondents per-household WTP for two scheduled payments to rebuild the tower to a condition similar to that shortly before it was destroyed (illustrated by using photographs). This would be achieved through voluntary contributions to a fund. The restoration project also includes the creation of a park around the tower.

5. Valuation Results

Overall 252 responses were gathered. Mean WTP estimates ranged from €53-59 per household (depending on method of estimation). Mean WTP estimates for respondents with low/average overall cultural consumption was €32-38 while for those with high overall cultural consumption it was €64-88. The results of the econometric analysis using logit and tobit models are presented in Table 1. Multiplying the mean WTP by two (for the two scheduled payments) and by the number of households in Godella gives an aggregate WTP of €396,000-443,000. This is 3-4 times the estimated cost of restoring the tower.

In the logit model, all coefficients are significant at the 5% level, except belonging to an environmental group and awareness of the municipality's role in conserving cultural heritage. Being younger or a shorter-term resident reduces the probability of accepting the bid. A higher bid level itself also negatively affects the likelihood of acceptance, as one would expect. In the tobit model, all tested coefficients were significant, apart from the bid level, indicating that bid level does not impact on actual WTP.

Table 1: Econometric analysis of probability of 'yes' response to a given bid level (logit model) and of WTP (tobit model)

Variable	Parameter estimate	*t*-statistic	Parameter estimate	*t*-statistic
	Logit model		Tobit model	
Intercept	-1.54	-2.63	-59.7	-6.85
Bid level	-0.45	-2.93	3.98	1.98
Income	0.49	3.99	10.2	5.64
Age	-0.78	-2.15		
Has lived in Godella for less than 20 years	-0.71	-2.02		
Belongs to an environmental protection group	-1.15	-1.73		
Places high subjective value on the tower's adjoining park	1.41	4.24	18.9	3.96
Respondent 'considers' fact that the municipality protects heritage	0.67	1.90	12.6	2.55
High overall cultural consumption	1.07	3.03	14.3	2.92
Had prior knowledge of the project			17.7	3.21
	N = 252, Pseudo R^2 = 0.48			

6. Comments

Protest responses were detected by a question asking for the reasons for a zero WTP, the most common stated reason being that the local government should pay for the restoration. Non-use values were not considered in the study, presumably as this would imply a positive WTP from people who would never see the tower. As the tower is not particularly unique, it is likely that its reconstruction would only have amenity benefits for local residents, and not non-use value for people further afield.

The hypothecated market is insensitive to scope as respondents were very able to appreciate and visualise exactly what they would be getting for their money. The very different WTP values attributed to those with high/medium/low cultural consumption is highlighted by the authors. This is consistent with expectations, as is the fact that longer-term residents (i.e. those with family roots in Godella) had higher WTP. Income is a statistically significant determinant of WTP, conforming with expectations of economic theory.

7. Suitability for Value Transfer

The valuation scenario outlines an instance of total rebuilding of a monument, therefore it may be difficult to transfer value to less drastic proposed programs, e.g. cleaning. However, the cultural asset in question is small-scale and not particularly famous or unique, which may make it suitable for value transfer to other similar small-scale projects.

8. Abstract

In this paper, the contingent valuation method has been applied to obtain the social benefits that stem from the restoration of an old Arab tower in the Valencia Region of Spain. Due to a current and past lack of protection, this historic monument is now in ruins. Therefore, 252 individuals were randomly interviewed to find out the potential value to local people of reconstructing the tower. The study distinguished between low/average, and high consumers of cultural goods. The main finding is that the mean willingness to pay is considerably higher for the second group. To give further credence to this observation both parametric and non-parametric approaches were employed and these yielded similar results.

eftec (1999a)

1. Study Reference

eftec (1999a) *The Economic and Financial Sustainability of the Management of the Historic Sanctuary of Machu Picchu*, report to Finnish Forest and Park Service, London.

An abridged version of the study is reported in: Mourato, S., Ozdemiroglu, E., Hett, T. and Atkinson, G. (2004) 'Pricing Cultural Heritage: A New Approach to Managing Ancient Resources', *World Economics,* 5: 1-19.

2. Heritage Asset

The Machu Picchu Historic Sanctuary in Peru is one of the best-known and most important archaeological sites in the world. Designated a UNESCO World Heritage site in 1983, it consists of the Machu Picchu Citadel and the Inca Trail. The Citadel is a 14th century Inca city, situated atop a mountain at approximately 2,500 metres above sea level. It includes a spectacular collection of temples, giant walls, terraces and ramps, and is widely acknowledged to be one of the most amazing urban creations of the Inca Empire. The Inca Trail is the route once used by the Incas to get to the Citadel, and passes a series of archaeological sites en route.

Machu Picchu attracts around 700,000 visitors per year, making it one of the largest tourist attractions in South America. Approximately 70% of visitors are foreign, mainly from other North America, Europe and other South American countries. But despite high numbers of tourists, profits from the site have been traditionally low, and a host of management issues exist, including tourist congestion on site and environmental pressures caused by overuse of the Inca Trail in particular.

3. Economic valuation methodology

A contingent valuation survey was conducted to estimate the value attached by visitors to access both the Machu Picchu Citadel and the Inca Trail. The objective was to inform a decision to increase the entry prices to both sites in order to control the numbers and raise revenue.

Both double-bounded dichotomous choice and payment card elicitation formats were used for all samples. First, the dichotomous choice question presented the current price (US$10 for Citadel and US$17 for Trail). Then the respondents were asked if they would pay a higher amount and if they said yes to the second amount, a yet higher (lower) amount. The set of bid levels were: lower bound (US$15, 20, 30, 50, or 75 – depending on the first bid) and upper bound (US$30, 50, 75, 125 or 210 – again depending on the firs bid). After these dichotomous choice questions, respondents were presented a payment card with 32 money amounts and were asked to nominate the amount that most closely matched the maximum amount they would be prepared to pay.

The interviews were face-to-face and took place in Cusco – the Inca Capital and the hub for tourists visiting Machu Picchu and the Inca Trail.

4. Valuation Scenario

The valuation scenario first reminded the respondents of the current entry prices, then presented with a hypothetical scenario where the price had increased while they were planning their visit, and subsequently asked to identify the maximum they would have been prepared to pay to visit the site under these circumstances. The increased entry fee could be paid at the gate or reflected in an increased package tour price. The questionnaire also elicited information on visitors' socio-economic characteristics, visitation and expenditure patterns, and attitudes and perceptions about the site.

A separate scenario involved the plans to build a cable car from the bottom of the hill to the Citadel. The respondents were shown pictures of how this may look like and asked if they supported the plans and if they would pay the ticket if the cable car was to be built.

5. Valuation Results

A total of 1014 face-to-face interviews (in Spanish, English and French) were conducted. The sample was split between tourists visiting the Citadel only (711 respondents) and those walking the Inca Trail (303), and was broadly representative of visitors to the two sites. Around 600 respondents were interviewed before their visit had taken place while the remaining 400 were interviewed after their visit.

Table 1 provides the socio-economic characteristics of the two samples. The samples combine before and after surveys. Table shows that those who visit the Citadel only are older and wealthier. This is not surprising since the difficulty of walking the trail necessarily attracts younger visitors.

Table 1: Socio-economic characteristics of the sample

	Citadel Only	**Inca Trail and Citadel**
Peruvian percentage of the sample	34%	19%
Foreign percentage of the sample (majority from US/Canada and Europe)	66%	81%
Average age	34	29
Peruvian tourists – mean income after tax (US$, 1999 prices)	10,000	8,700
Foreign tourists – mean income after tax (US$, 1999 prices)	64,800	60,000

Overall, only about 15% of those approached refused to answer the survey, a very low refusal rate for studies of this type, and 23% in the Citadel sample and 18% in the Inca Trail sample refused to answer the income question.

Table 2 reports mean and median WTP estimates for dichotomous choice and payment ladder formats. All information is provided separately for Citadel only and Inca Trail and Citadel samples. The function is based on all interviews, while mean and median results are reported separately for Peruvian and foreign tourists.

Table 3 shows the WTP functions for Citadel Only and Inca Trail samples. Separate functions are estimated for the two elicitation formats. In the dichotomous choice function, the dependent variable is the probability of accepting to pay a given bid level. Those respondents who did not reveal their income are excluded from the analysis. In the payment ladder function, the dependent variable is the log(WTP).

The variables used in Table 3 are defined as follows:

Bid level	Initial bid level in the dichotomous choice format
Sex	1: male, 0: female
Age	Respondent's age in years
Education	1: has PhD or Master's degree, 0: does not have PhD or Master's degree
Income	Respondent's monthly after-tax income in US$
Visit time	1: before, 0: after
Nationality	1: Peruvian, 0: foreigner
Tour	1: on a package tour, 0: not on a package tour
Know fee	1: knows entry fee, 0: does not know entry fee
Price differentiation:	1: in favour of differential pricing (cheaper entry for Peruvians), 0: against differential pricing
Pre-booking	1: in favour of pre-booking the visit to Machu Picchu, 0: against

Table 2: Mean and Median WTP estimates (US$, 1999 prices)

	Citadel Only	Inca Trail and Citadel
Dichotomous choice		
Mean WTP - for all tourists	47.6	48.4
Payment ladder		
Mean WTP – Peruvians	26 (1.60)	35* (4.39)
Mean WTP – Foreigners	47 (2.08	62* (4.02)
Mean WTP – for all tourists	40 (1.53)	56* (3.40)
Median WTP – Peruvians	20	20
Median WTP - Foreigners	30	40
Median WTP – for all tourists	30	32.5

Notes: the numbers in brackets are the standard errors. *: averages exclude one response of US$1,000 which is deemed to be an outlier.

Table 3: WTP function

	Citadel Only		Inca Trail and Citadel	
	Dichotomous choice	**Payment ladder**	**Dichotomous choice**	**Payment ladder**
Bid level	-0.035507** (-7.716)	0.0010531 (1.141)	-0.0072904** (-3.737)	-0.0003585 (-0.824)
Sex (male)	0.1925987 (0.899)	0.0747088 (1.161)	-0.6230683** (-1.998)	0.0109445 (0.109)
Age	0.0173442* (1.914)	0.0020492 (0.662)	0.0408734* (1.757)	0.0173946** (2.438)
Education	0.4884182 (1.346)	0.2535042** (2.463)	0.073458 (0.157)	0.0510827 (0.351)
Income	0.0000393** (2.222)	0.0000122** (2.494)	0.0000309* (1.647)	0.00000945** (2.210)
Visit time (before)	0.4269193* (1.894)	0.0424098 (0.645)	-0.1301159 (-0.397)	-0.0867746 (-0.812)
Nationality (Peruvian)	-1.478609** (-5.796)	-0.6700282** (-8.711)	-0.6519819 (-1.524)	-0.5418986** (-4.174)
Package tour	-0.3492936** (-2.667)	-0.0781756* (-1.858)	0.0329563 (0.174)	-0.1226792** (-2.314)
Know fee	-0.3492936* (-1.753)	-0.2076172** (-3.196)	-0.8893957** (-2.776)	-0.1891594* (-1.899)
Price differentiation	0.0213876 (0.257)	0.055721** (2.037)	-0.0582286 (-0.480)	0.0720908** (1.933)
Pre-booking	0.2250424** (2.636)	0.0830309** (3.353)	-0.0833611 (0.630)	0.0446155 (1.141)
Constant	1.288865* (1.769)	3.145396** (16.607)	-0.0891355 (-0.077)	3.399699** (11.055)
Log-likelihood	-265.07387		-132.71877	
Wald test: chi^2	93.16		39.98	
F-test F(11,519)		15.72		7.64
Psuedo R^2	0.28	0.25	0.15	0.20
N	536	531	239	237

Notes: the numbers in brackets show the z-statistic for the dichotomous choice function and the t-statistic for the payment ladder function. **: significant at 5% level. *: significant at 10% level. Bid level is included in the payment ladder function to see if the bid level preceding the payment ladder question has an influence on the latter.

6. Comments

Both use and non-use values of 'users', i.e. the tourists, are captured, even though it is not possible to disaggregate these. Non-users are not included in the study sample.

Validity tests are conducted to see the impact of price changes, income and attitudes on the bid levels accepted or WTP amount selected. Both models explain the WTP choices well and the explanatory variables have the expected signs. Socio-economic variables are highly significant in explaining the probability of accepting to pay a particular entry price. As would be expected, visitors with higher incomes are more likely to accept higher bid levels / amounts on the payment ladder. Even after controlling for income differences, Peruvian tourists are less likely to accept paying a given price than foreign tourists. Furthermore, the probability of accepting a bid decreases as the bid increases as shown by the significantly negative coefficient on the bid level variable.

Attitudinal variables are also important. For example, those who do not know the current entry price are willing to pay more. Opinions about differential pricing and pre-booking are also notable influences of maximum WTP.

Scope and embedding is not relevant in this case as the study is about the entirety of one site and the questionnaire makes it clear that the entry price would cover one site and one site only.

7. Suitability for Value Transfer

Machu Picchu is a unique site set in a stunning natural environment. While the valuation context is a common one, average values would not be advisable for transfer since the good is so different to heritage assets found in the UK. That said, the WTP functions could be useful, especially since socio-economic characteristics are found to be significant. However, unless detailed user surveys exist (at least ones which ask the visitors where they live), it would be difficult to find data for significant factors such as income. In addition, non-WTP questions such as reaction to management / cable car / price differentiation etc. could also be useful.

8. Abstract

The management of important cultural heritage (tourist) sites has largely been carried out without due consideration of economic criteria. The pre-eminent example of this is inadequate entry price strategies that result in the number of visitors exceeding the site carrying capacity leading, in turn, to congestion and physical deterioration of the site. Moreover, in view of the precarious current status of public subsidies, it is increasingly important to secure potential visitor revenues in order to finance site conservation and improvement works. This study uses the contingent valuation method to investigate the potential for alternative management policies, based on economic theory, to generate (social) welfare improving benefits with respect to the management of the Historic Sanctuary of Machu Picchu in Peru. The results show that current entry prices are significantly below profit maximising values and, in some cases, only marginally achieving cost recovery. A number of policies involving price differentiation are argued to be more efficient instruments not only in terms of increasing financial profit but also social welfare in Peru.

Garrod and Willis (2002)

1. Study Reference

Garrod, G. and Willis, K.G. (2002), 'Northumbria: castles, cathedrals and towns', Chapter 4 in Navrud and Ready (2002).

The above reference summarises the findings of three separate contingent valuation studies, which are also reported in:

Garrod, G., Willis, K.G., Bjarnadottir, H. and Cockbain, P. (1996) 'The Nonpriced Benefits of Renovating Historic Buildings - A Case Study of Newcastle Grainger Town', *Cities*, 13(6), 423-430.

Powe, N. and Willis, K. (1996) "Benefits Received by Visitors to Heritage Sites: A Case Study of Warkworth Castle", *Leisure Studies*, 15, 259-275.

Willis, K.G. (1994) 'Paying for Heritage: What Price for Durham Cathedral?' *Journal of Environmental Planning and Management*, Vol. 37, No. 3.

2. Heritage Asset

The study summarises and compares valuation of three cultural assets in the North East of England which differ in how much they resemble conventional marketed goods: Warkworth Castle (near Amble) where visitors can only enter through payment of an entrance fee; Durham Cathedral, which asks visitors for a voluntary donation; and Grainger Town in Newcastle, a commercial area with many historic buildings, which is free to enter.

Warkworth Castle is a largely ruined castle with parts dating back to the 13th and 15th centuries. It attracts about 63,000 visitors a year and is managed by English Heritage. Durham Cathedral, a World Heritage Site, was built between 1093 and the early 12th century, and is one of the most important examples of Romanesque architecture in Britain.

Grainger Town is an area which contains mostly early 19th century buildings, 40% of which are listed[3], and is considered one of the finest examples of town planning in England. However, under-use of some of these buildings (partly resulting from constraints due to their listed status) has led some of them to be under-maintained.

3. Economic valuation methodology

At Warkworth Castle, a face-to-face contingent valuation (CV) survey with an open-ended elicitation format was used. Visitors who were observed deciding not to enter the castle after looking at entrance prices were asked what their WTP to enter was. They were then offered a ticket at the stated price to see if they actually would accept it.

At Durham Cathedral, a CV survey was undertaken, using face-to-face interviews with people leaving the cathedral. The elicitation format is not specified. Both of these two surveys used a random sample which did not use quotas for socio-economic characteristics.

At Grainger Town, a CV survey was undertaken to find the WTP of citizens of Newcastle to pay a council tax increase in order to par towards the restoration of buildings in Grainger Town. A sample of council tax payers outside the Grainger Town area was consulted. Respondents were initially asked whether they were willing to pay any increase in council tax for the restoration at all, and then if so asked for an open-ended WTP figure. They were told that their payment would be matched by external funds. The method of sampling and of approaching interviews (whether face-

[3] Newcastle City Council website http://www.newcastle.gov.uk/grainger

to-face or via phone) is not detailed either here or in an alternative description of the study (Garrod al., 1996).

4. Valuation Scenario

At Warkworth Castle a simple WTP to enter or not enter the Castle was sought, with no change to the good being proposed. At Durham Cathedral the maximum WTP to avert the introduction of an entrance fee was sought, again with no change in the good proposed. In the Grainger Town example, WTP towards the restoration of historic buildings by means of a tax was sought The study lacks detail on the extent of the physical change hypothecated. Garrod al. (1996) mentions that the proposed changes include "an overall strategy for the development of the area, including the introduction of a firm planning framework incorporating measures to identify viable uses for under-utilized buildings." Again, this does not detail the proposed physical restoration changes to the buildings.

5. Valuation Results

The Warkworth Castle experiment was designed more to test stated against revealed preferences, and was not really designed to find a mean WTP for entering the site (as it excluded those whose WTP exceeded the entrance fee). Ninety seven random potential interviewees were identified, of which only 34 were indeed actual immediate potential visitors (as opposed to people checking the information to come back another time). The mean WTP for those who accepted tickets was £0.94 (in 1994 £), while it was £1.17 for those who did not accept. Equal numbers accepted the offer to enter as refused.

The Durham Cathedral survey drew 92 responses. The mean stated WTP was £0.77 (1993 £). Thirty one percent of respondents said they would be willing to pay more than the suggested voluntary donation (£1 in 1993), while 36% were unwilling to pay anything. Using the WTP figures, the authors construct a demand curve and use this to calculate a figure for a compulsory entrance fee at which revenues would be maximised. This figure was £0.88, estimated to generate revenue that would be practically identical to that accrued under the voluntary system (although of course some voluntary over-paying may still occur).

The Grainger Town survey resulted in a mean and median WTP (respectively) of £13.76 and £10.00 per household per year (1995 £). Truncating the distribution at both ends by 5% and 10% respectively led to reduced mean WTP of £11.67 and £10.11[4]. Adjusting WTP for wealth (proxied by the council tax bands of properties in Newcastle) and aggregate WTP was estimated of £0.95 million. There were 162 legitimate bids.

The WTP results for Grainger Town are tested econometrically using a linear regression model which is presented in Table 1.

[4] The distribution of WTP estimates is sometimes truncated, i.e. the bottom or top (or both) *X*% of the bids are sometimes removed, in order to test for the effect of extreme bids on mean WTP.

Table 1: WTP bid function for Grainger Town

Variable	Parameter estimate	*t*-value
Intercept	0.895	4.92
Respondent engages in recreational activities in Grainger Town (dummy)	0.689	3.41
Household has two or more cars	0.345	1.54
No. children in household	-0.273	-2.22
Respondent considers the renovation of Grainger Town to be a problem in need of immediate attention (dummy)	1.065	5.34
Household contains a member of the National Trust	0.633	2.64
Household contains a member of a local history society	0.927	2.08
Respondent is unemployed or otherwise economically inactive (but not retired)	-0.423	-1.63
n = 162, R^2 = 41.1%, R^2(adj) = 38.4%,		

A positive coefficient in the above table shows that the factor is likely to increase respondents' WTP (e.g. National Trust members have higher WTP than non-members – all else remaining the same). A negative coefficient, on the other hand, shows the opposite effect (e.g. unemployed respondents have lower WTP than employed respondents – all else remaining the same).

6. Comments

The Warkworth Castle CV experiment provided an opportunity to test a stated preference technique against revealed preferences. Steps were taken to avoid strategic behaviour from visitors, such as not repeating the experiment on the same day of the week. The authors conclude that the experiment shows that CV results may not be very reliable. However, they also discuss the point that if stated WTP diverges from real WTP by a random error term, we should expect to see half the respondents overstate their WTP (hence refuse to buy at the stated price) and half understate it. I.e. if respondents are just as likely to overstate as understate their real WTP, we should perhaps expect half the respondents to reject the entrance offer, revealing that they have overstated WTP.

Testing of the significant determinants of WTP is not discussed for either the Warkworth Castle or Durham Cathedral studies. In the Grainger Town survey, 40% of the variation was explained by the model outlined above. This is taken as evidence that the WTP bids were not random responses. Issues surrounding sampling bias do not appear to have been addressed in the Grainger Town study. Consistency with economic theory is not fully discussed for any of the studies (the Grainger Town study does not include income in the regression analysis, although it does include unemployment).

7. Suitability for Value Transfer

The Warkworth Castle and Durham Cathedral studies are not suitable for value transfer in the decision making context of valuing marginal changes to heritage assets, as they value access to the asset, not any change in the state of the asset for which respondents may be asked to contribute. However, their transferability may be more feasible in a context of deciding on changing access, pricing etc.

In the Grainger Town study, the asset in question is not particularly unique, and the value could possibly in theory be transferred to other comparable urban areas. However, the bid function does not include an income term, so transferring to other areas with an average income much lower or higher than that of Newcastle would have to be done cautiously, perhaps using the unemployment ratios. The study does not fully specify the noticeable changes, in terms of restoration, that respondents would observe.

8. Abstract

This study concentrates on Northumbria, an area in the North East of England with a distinctive character and history, and attempts to estimate the value of three sites that have particular cultural associations for people in the area. Each of the sites investigated is different in terms of its similarity to conventional marketed goods. In the first case, Warkworth Castle, access to the castle interior is only available after the payment of an entrance charge whereas visitors to the second case site, Durham Cathedral, are only asked to make a voluntary donation. By contrast the third case, Newcastle's Grainger Town, is a commercial area with a wealth of historic buildings, the exteriors of which can be enjoyed free of charge. Non-market valuation techniques permit aspects of the cultural benefits of each of these sites to be estimated.

Kling et al. (2004)

1. Study Reference

Kling, R.W., Revier, C. and Sable, K. (2004) 'Estimating the public good value of preserving a local historic landmark: the role of non-substitutability and citizen information', *Urban Studies*, Vol. 41, No. 10, 2025-2041.

2. Heritage Asset

The Northern Hotel is an important landmark in downtown Fort Collins, Colorado, USA. The building originates from 1866 and became a hotel in 1905. Its current size and architectural features date from the 1920s and 1930s. The building has been in decline since the 1950s and was threatened with a serious risk of irreversible deterioration and eventually total loss. Decades of neglect, a major fire and inappropriate commercial use has degraded the structural integrity and appearance. While the hotel is not of importance to the national population it represents a unique, large, highly visible and broadly identifiable landmark that represents the historic identity of the city.

3. Economic valuation methodology

The study uses the contingent valuation method (dichotomous choice) and applies a referendum format. A double split sample is featured, where the sample was split in order to allow for comparison between WTP questioning and WTA questioning. The WTA question was assessed through a paired comparison (PC) method, which is a hybrid measure of value that is similar to WTA (see comments section below for more discussion). The sample is also split with one sub-group receiving a 'high information' version of the questionnaire and another sub-group receiving a 'low information' questionnaire.

The survey was carried out by mail, with 501 households in Fort Collins selected at random. The return rate was 50.5%. Overall the final sample size was 252, although only 212 of these were usable.

4. Valuation Scenario

In the WTP scenario, respondents were asked whether they would vote 'yes' or 'no' on a one-time property tax for the purpose of restoring the Northern Hotel, which otherwise would continue to deteriorate and might eventually require demolition. Bid amounts of the tax level varied between respondents from $2 - $300 (US $). In the PC (WTA) scenario, respondents were asked if they would vote 'yes' or 'no' on a proposal to use their share of a revenue surplus for the restoration project. The bid amounts for this rebate scenario also ranged between $2 and $300.

5. Valuation Results

The survey sample population was found to be noticeably more affluent, older and more educated than the general population of Fort Collins. The authors also suspected that the sample respondents had a longer average tenure in the area and a higher than average frequency of visits to the historic city centre, although comparative data on the general population was not available to confirm this hypothesis. The non-representative sample is likely due to respondent self-selection and gives rise to a potential sample bias in the analysis.

Of the 212 usable observations, 35 protest responses were evident, giving a sample of 177 observations. Table 1 presents a logit model that estimates the relationship between the probability of a respondent saying 'yes' to the referendum question (i.e. either 'yes' to the WTP question or 'yes' to the PC question) and a number of explanatory factors.

Table 1: Logit model - dependent variable log of probability (yes) / 1 – Probability (yes)

Variable	Coefficient (s.e)
Constant	1.96 (2.68)
Tax (dummy variable, = 1 if WTP question, 0 for PC question)	-2.47 (0.553)*
High Info	0.00180 (0.006)
Bid (the amount of tax or revenue surplus proposed to a respondent)	-0.0235 (0.005)*
High Info × Bid	0.018 (0.006)*
Age (age of respondent)	-0.008 (0.0183)
Education (number of years schooling completed by respondent)	0.191 (0.161)
High Info × Education	-0.572 (0.219)*
Income (before tax household annual income)	0.0199 (0.00753)*
Social Dummy (disagree)[a] (=1 if response was 1 or 2 on likert scale, 0 otherwise)	-5.75 (1.63)*
Social Dummy (neutral)[a] (=1 if response was 3 on likert scale, 0 otherwise)	-4.37 (1.38)*
High Info × Social Dummy (neutral)	3.30 (1.54)*
n = 177, r^2 = 0.397, LR (12df) = 85.0, Yes votes = 70.6%	

Notes:
[a] The 'social dummy variables refer to an attitudinal question which asked respondents whether they agreed to the statement that, "Historic preservation efforts are important for building community, identity and unity among Fort Collins residents," (Likert scale: strongly disagree = 1, neutral = 3, strongly agree = 5).
* Indicates significant at 5% level.

The estimated model suggests that the key explanatory variables (with expected coefficient signs) are the bid amount presented to the respondent, the respondent's income level and a 'disagree' or 'neutral' rating on the social importance of historic preservation. Higher income leads to a higher probability that a respondent will vote 'yes', whilst respondents who have a neutral or negative view of historic preservation are less likely to vote 'yes' than respondents with a positive attitude. In addition the tax dummy and bid variables are also found to be significant. Respondents receiving the WTP question are less likely to vote 'yes' than those receiving the PC question, whilst higher bid amount also result in a lower probability of a 'yes' response. The three cross-effect variables measure the change in the bid, education and social dummy (neutral) coefficients for the high information sub-sample. For instance, for a given bid amount, respondents who received more information were more likely to vote 'yes' than respondents who received low information (high info × bid). In contrast, for a given level of education, respondents who received more information were less likely to vote 'yes' than respondents who received low information (high info × education). Finally, for those with a neutral rating of the importance of historic preservation, respondents who received more information were more likely to vote 'yes' than respondents who received low information (high info × social dummy – neutral).

Table 2 presents the estimates of benefit derived from the restoration of the hotel, which are calculated from the logit function presented in Table 1. To adjust for the apparent non-representative sample, the authors applied a number of adjustments to calculate a range of valuations (see notes to Table 2).

Table 2: Estimates of mean valuation per household - US $ (90% confidence interval)

	Model 1	Model 2	Model 3a	Model 3b
WTP – low info	121 (92-151)	95 (57-137)	9 (1-47)	3 (0.2-31)
PC value – low info	224 (195-274)	196 (159-250)	59 (15-137)	24 (2-111)
WTP – high info	232 (139-927)	353 (187-1429)	262 (101-959)	5 (0.3-114)
PC value – high info	630 (363-2615)	779 (430-3421)	669 (349-3012)	55 (4-519)

Notes:
Model 1 – unadjusted, with variable means set at all sample means.
Model 2 – adjusted, with variable means set at city population means but attitude (social dummy) set at sample means.
Model 3 – adjusted, with variable means set at city population means with attitude (social dummy) set at 'neutral'.
Model 3 – adjusted, with variable means set at city population means with attitude (social dummy) set at 'negative'.

As Table 2 illustrates, large variation exists in the valuation of the benefit of the hotel's restoration. In particular, the reported values are highly sensitive to the socio-demographic assumptions applied and also assumptions regarding attitudes towards historic preservation. Given the identification of possible sample self-selection, the authors suggest that the more 'realistic' valuations would be those presented by model 3a, or even more conservatively, model 3b. Aside from assumptions concerning population characteristics and attitudes, there are noticeable differences between WTP values and PC values and also a noticeable influence from high information on estimated values.

6. Comments

Much economic valuation literature discusses the issue as to why WTP and WTA are found to differ in empirical studies when standard theory suggests that the two measures of value should be similar[5]. Standard theory suggests that WTP and WTA for an incremental change in the quantity (or quality) of a good should be approximately equal, and therefore reflect the 'willing buyer, willing seller' price that would prevail in a market.

In this study, the authors assess the role that non-substitutability may play in causing WTP values and PC values (which is similar to WTA) to differ. Application of a PC approach, rather than a standard WTA question eliminates the possibility that differences between WTP values and PC values are caused by any phenomena other than non-substitutability of historic good[6]. In particular, commodities that display public good attributes and have few substitute goods are likely to see divergences in measures of WTP and WTA[7].

The authors note that the negative coefficient on the 'Tax' variable indicates that respondents' valuations are sensitive to whether they are presented with the WTP question or the PC question and that this impact is also manifest in the differences between estimated values derived from WTP questions and PC questions. The authors conclude that non-substitutability of the historic good in question is critical to these findings; the uniqueness, irreplaceability and sentimental properties of the hotel are evident.

In addition, the provision of more information to respondents is fundamental to valuations derived. In particular demand for preservation is found to become more inelastic with respect to the bid level (i.e. inelasticity indicates that demand for preservation is relatively unresponsive to changes in the bid level changes), suggesting again that non-substitutability is a major factor behind household's valuations. Specifically, a higher information level served to distinguish the hotel from other local built heritage assets and therefore enhanced the non-substitutability factor in respondent's responses.

7. Suitability for Value Transfer

Whilst the study presents seemingly robust results and accounts for the large discrepancies in the reported WTP and PC values (e.g. through adjusting for sample bias), the valuations of the benefit derived from the restoration of the Northern Hotel are found to be particularly influenced by the hotel's perceived non-substitutability. This would suggest that there is little scope for transfer of economic valuations from the study, given this context-dependence.

8. Abstract

This study applies stated-preference methods to estimate the public good values of preservation and restoration of a local historic landmark in a medium-sized US city. The survey device centres on a referendum-style dichotomous-choice question regarding city participation in a restoration partnership. Use of a double split sample allows analysis of the effect on valuation of both heritage

[5] See for example: Thaler (1980); Hanemann (1991); Tversky and Kahneman, (1991); Shogren et al. (1994); Knetsch. (1995); Brown and Gregory (1999).

[6] Specifically PC adjusts for income effects (reference point) and eliminates potential endowment effects that have been observed in other studies. See Brown and Gregory (1999) for more discussion on these issues.

[7] For instance, in the context of a person's life, WTP could differ vastly; in the extreme, WTP could equal an individual's entire income, which is finite, whilst WTA could be infinite (Hanemann, 1991).

information and willingness-to-pay versus willingness-to-accept constructs, where the latter is approached by the method of paired comparison, allowing a non-substitutability effect to be separated from any endowment effect. Econometric analysis using a standard binary logit model indicates the existence of a strong non-substitutability effect and a significant information effect that further suggests the importance of non-substitutability in valuation.

Maddison and Mourato (2002)

1. Study Reference

Maddison, D. and Mourato, S. (2002), Valuing different road options for Stonehenge, Chapter 7 in Navrud and Ready (2002).

This study is also reported in: Maddison, D. and Mourato, S. (2001), Valuing different road options for Stonehenge', *Conservation and Management of Archaeological Sites*, 4(4): 203-212.

2. Heritage Asset

Stonehenge is a large stone circle near Salisbury in south west England. Constructed between 3,500 and 5,000 years ago, it is the most important pre-historic site in the United Kingdom and one of the best known monuments in Europe, if not the world. The surrounding area contains over 450 other archaeological monuments, such as Bronze Age barrows. Stonehenge is a World Heritage Site and attracts around 700,000 visitors each year. Presently two fairly busy A-roads (the A344 and A303) meet very close to the site; the traffic is very much both visible and audible.

3. Economic valuation methodology

The contingent valuation method is used in conjunction with a payment ladder and face-to-face interviews. Respondents were asked to tick payments they are sure they would be willing to contribute, to cross payments they are sure they would not be willing to contribute, and to leave all others blank. There were two sub-samples; a national sample of 500 random households and a sample of 300 random UK visitors actually at the site. The south-west of England was deliberately more strongly represented in the national sample, though it is not clear to what extent.

4. Valuation Scenario

The study elicits WTP for (or WTP to avoid) a 2km tunnel under the site which would contain the A303, while the A344 would be closed altogether. This would eliminate both noise and visual intrusion from traffic; the road would not be visible at all from the site. Conversely, of course, drivers along the A303 would not be able to see Stonehenge. Therefore, both external heritage benefits and external heritage costs are included in the valuation, but factors such as possible reduced driving times and accident rates are excluded. Computer-enhanced images and a map were used to illustrate the site with and without the roads. The tunnel construction method was not mentioned. Payment would be effected through an annual tax increase for two years.

Respondents were presented with two scenarios (Stonehenge with and without the road tunnel) and were asked their WTP to secure their preferred scenario. It was not assumed in the survey that respondents would prefer the tunnel option.

5. Valuation Results

Altogether 357 individuals successfully completed the questionnaires (129 on site and 228 off). Mean WTP was found to be £12.80 per household for the tunnel scenario and £4.80 per household for the current scenario. There were 144 valid bids for the tunnel scenario and 126 valid bids for the current scenario (without the tunnel). Bids for the tunnel scenario were much more heavily skewed towards low payment (£0.00 to £0.50). WTP is aggregated over the population of the UK using a 6% discount rate and probabilities of support from each scenario (taken from the off site sample only).

The WTP responses and probability of having a positive WTP for the tunnel option are analysed econometrically as presented in Table 1.

Table 1: WTP function and probability of having a positive WTP for transport design around Stonehenge

	Tunnel scenario		**Current scenario**	
The linear WTP function				
	Parameter estimate	*t*-value	Parameter estimate	*t*-value
Intercept	0.6357	2.12	-5.968	1.90
On site (dummy)	0.0211	0.54	1.579	1.10
South west (dummy)	0.2890	0.65	1.789	0.94
Probit analysis of probability of supporting the tunnel option				
Intercept	-0.1416	1.38		
On site (dummy)	0.3470	2.30		
South west (dummy)	0.1253	0.71		

Respondents in the South West were not significantly willing to pay more for either option or were not significantly more likely to support the tunnel option. Respondents at the site were more likely to support the tunnel option.

6. Comments

Many more variables could have been used in the econometric analysis (inc whether the respondent had ever been to Stonehenge, whether they drive past it regularly). Income is not incorporated into the econometric analysis either here or in Maddison and Mourato (1999). It is mentioned that zero protests are removed but not described how protests are separated from genuine zero responses. The current scenario suffered a high number of protest bids because of rejection of the notion of paying for "no change", i.e. when no construction work for the tunnel was to be undertaken.

7. Suitability for Value Transfer

The valuation scenario is very well-specified, but the asset under question is unique and one of the most widely-recognised and loved national heritage assets. This is demonstrated by the fairly generous levels of WTP of even people who do not regularly see the site. It is doubtful that the result values found here could be transferred to another similar decision context because of the uniqueness of the site.

8. Abstract

This study takes a valuation-based approach to examining the heritage benefits of an alternative road layout for the Stonehenge site: building a 2-km tunnel for the A303. The heritage benefits of the proposed tunnel refer to changes in the level of visual intrusion, noise and land severance relative to the current scenario. Specifically excluded are values relating to the effect on time savings and reduced accident rates. The study also finds that significant numbers of individuals derive satisfaction from viewing Stonehenge as they drive past and would miss the view if it were taken from them. There was also strong but not unanimous support for the view that the roads adversely affected the Stonehenge site. The large net heritage benefit associated with the construction of the tunnel is at variance with the bare majority in favour of its construction.

Morey et al. (2002)

1. Study Reference

Morey, E.R., Rossmann, K.G., Chestnut, L.G. and Ragland, S. (2002), 'Valuing reduced acid deposition injuries to cultural resources: marble monuments in Washington, DC', Chapter 11 in Navrud and Ready (2002).

Aspects of this study are also reported in:

Morey, E., K. Rossmann, L. Chestnut and S. Ragland (1997) *Valuing Acid Deposition Injuries to Cultural Resources*, Report for the National Acid Precipitation Assessment Program.

Morey, E. and Greer Rossmann, K. (2003) 'Using Stated-Preference Questions to Investigate Variations in Willingness to Pay for Preserving Marble Monuments: Classic Heterogeneity, Random Parameters, and Mixture Models', *Journal of Cultural Economics Volume*, 27, Number 3-4, 215 – 229.

2. Heritage Asset

The study concerns 100 outdoor marble monuments in Washington DC, mostly connected to the history of the American government, such as the Lincoln and Jefferson memorials and a statue of Benjamin Franklin. Nearly all were erected between 1850 and 1940. These monuments hold significance for many Americans as symbols of democracy as well as historic monuments to the founding of America and the Civil War. The monuments have deteriorated a little due to air pollution, both by surface erosion and soiling. Because of the different sizes and shapes of the monuments, as well as differences in stone quality, the rate of deterioration of the monuments is quite varied.

3. Economic valuation methodology

The study uses the choice experiment approach. This asks respondents to pick between a set of alternative actions at different price levels. Surveys were undertaken face-to-face in Boston and Philadelphia. Respondents were randomly selected by telephone and given $50 for agreeing to complete the survey (although they were not told the subject of the survey during this selection).

4. Valuation Scenario

The monuments were listed and a map showing their location presented. Three preservation programs were described to respondents hypothecating that three (fictional) alternative treatment processes could be used to slow down the deterioration of the monuments. Photographs of each monument were digitally altered to show its likely condition in 75 and 150 years from now if no preservation action were taken. It was claimed that the hypothetical treatment options would lengthen the time taken to reach these stages of deterioration by 25% (Option A), 50% (Option B) or 100% (Option C). The options were presented, using representative photographs, as timelines compared to the "no action" baseline. Each respondent was asked to choose between 10 pairwise choices along the lines of: "Would you prefer Option A/B (or no action) at $*x* or Option A/B/C at $*y* (where *x* and *y* were one-off payments which could take one of seven values, and $y > x$, therefore the second option needed to represent an improvement on the first option).

5. Valuation Results

Two hundred and fifty-nine interviews were conducted. The socioeconomic characteristics of the survey sample are presented in Table 1, along with those of the population.

Table 1: Socioeconomic characteristics of the survey sample and host population

Characteristic	Sample	Population
Age: 18-24	9%	16%
25-34	14%	24%
35-44	26%	18%
45-64	41%	24%
65+	10%	18%
Ethnicity: Caucasian	76%	70%
Non-Caucasian	24%	30%
Income: < $12,000	8%	20%
> $12,000	92%	80%

The indirect utility function used was:

$$V_{ij} = (b_1 + b_2\text{Female}_i + b_3\text{Low\_income}_i) \times (\text{Income}_i - \text{Price}_j) + (b_4 + b_5\text{Age}_i + b_6\text{Non\_caucasian}) \times \text{Level}_j + (b_7 + b_8\text{Age}_i + b_9\text{Non\_caucasian}_i) \times \text{Level}_j^{0.5}$$

where Level_j takes the value 0 for no preservation, 0.25 for Option A, and so on.

The parameter estimates are summarised in Table 2.

Table 2: estimates of the parameters used in the indirect utility function

Parameter	Estimates	*t*-statistic
b_1	0.052	12.1
b_2	-0.024	-5.5
b_3	0.035	3.3
b_4	-1.165	-1.4
b_5	0.039	2.2
b_6	-0.751	-1.4
b_7	3.285	3.8
b_8	-0.012	-0.7
b_9	-0.961	-1.7

These parameters need more subtle interpretation than a regression on WTP; e.g. parameter b_2 shows that women have a lower marginal utility of income[8] than men, so are likely to be willing to pay more. Similarly, parameter b_3 shows that people on lower incomes have a greater marginal utility of income, so are likely to be willing to pay less.

This model was able to predict 75% of the choices, though was more accurate for some respondents than others. From this, the estimated mean WTP per household for each option was found to be $38 for Option A, $56 for Option B and $82 for Option C. It was found that women, Caucasians, higher earners and older people were in general willing to pay more. After weighting the mean WTP to make up for the difference between the sample and population socio-economic characteristics, weighted mean WTP for the three options was estimated as $33, $47 and $68.

6. Comments

The study shows that non-use value, and in particular bequest value, are important contributing factors to respondents' value of the cultural assets. Respondents were very aware of the timescales

[8] The marginal utility of income is represented in the indirect utility function by the term $(b_1 + b_2\text{Female}_i + b_3\text{Low\_income}_i)$.

involved and were being asked to contribute for a state of preservation many years after their own deaths. In responses to survey questions, respondents also stressed the importance of preserving monuments for future generations.

The study does not discuss the possibility that some respondents might have chosen the non-preservation option for protest reasons.

The survey also included a payment ladder for WTP for Option C which could be used to compare with the results obtained from the choice experiment. Mean WTP using this set of responses was not significantly different from the choice experiment mean WTP if random errors were assumed to be distributed log-normally (although it was if distributed normally).

7. Suitability for Value Transfer

The valuation scenario is very tightly defined. However, the assets valued in the study are unique symbols of American national identity, and therefore it is unlikely that the value could be easily transferred to protecting other monuments from air pollution.

8. Abstract

This study estimates the benefits of reducing acid deposition injuries to an important set of cultural resources: the 100 outdoor marble monuments in Washington, DC. The reductions in injuries are presented as hypothetical preservation programs that mimic the likely range of injury reductions resulting from the reductions in sulphur dioxide (SO_2) emissions required by Title IV of the 1990 US Clean Air Act Amendments.

Group interviews were conducted in the Philadelphia and Boston metropolitan areas. The results indicate that, on average, households in these areas are willing to make a one-time payment of $33 to $69, depending on the level of preservation, to slow down the rate of deterioration of the monuments.

Mourato et al. (2002)

1. Study Reference

Mourato, S., Kontoleon, A. and Danchev, A. (2002), Preserving cultural heritage in transition economies: a contingent valuation study of Bulgarian monasteries, Chapter 6 in Navrud and Ready (2002).

2. Heritage Asset

There are 164 Orthodox monasteries in Bulgaria, some of which are well over a thousand years old. The most famous is in west Bulgaria at Rila, the highest mountain in Bulgaria, on a site associated with St John of Rila. Rila Monastery is a World Heritage Site, as are the rock-hewn monasteries and churches of Ivanovo in north east Bulgaria (UNESCO, 2005). The monasteries are characterised by their "picturesque brickwork … striking facades, portals full of reliefs with ornaments and figures, limestone and marble cornices, floors made of mosaics and ceramic tiles and, above all, walls covered with powerful icons, magnificent frescoes, mosaics … [and] woodcarvings". Some of the icons and frescoes are important masterpieces in their own right. Many of the monasteries are also located in areas of great natural beauty.

The upkeep of all but the most prestigious monasteries was under-funded during the Communist era, and this state of affairs has mostly continued since. Many of the monasteries are neglected and in urgent need of repair.

3. Economic valuation methodology

The study uses the contingent valuation method with an open-ended elicitation format. The survey was undertaken at 17 sampling points in Bulgaria. The overall sample was designed to be socio-economically representative of the Bulgarian population.

4. Valuation Scenario

Respondents were given textual and visual information on the current state of Bulgarian monasteries. Respondents were then asked for their WTP for a management programme to protect all monasteries paid for through a tax increase. Photographs of buildings and frescoes were used to illustrate the likely effects of repair work.

5. Valuation Results

Four hundred eighty three responses were attained. Thirty six percent of valid respondents stated that they were not willing to pay to protect Bulgarian monasteries, largely because cultural heritage protection did not rank high compared to social, health and environmental issues. Mean WTP per household per year was BGL 2,062 (1996 Bulgarian Leva, BGL 500 = US$1), while amongst those who expressed a non-zero WTP it was BGL 3,203. Median WTP was BGL 500. These figures correspond to about 0.1% of per capita GNP.

The demographic profile of the sample is summarised in Table 1 and the econometric analysis (using a tobit model) in Table 2.

Table 1: Socio-economic characteristics of the sample

Gender	
Male	48%
Female	52%
Highest educational attainment	
Primary school	23%
Lower secondary	53%
Upper secondary	5%
University	19%
In full time employment	52%
Owns car	48%
Mean family size	3
Mean age	45 years
Mean gross monthly household income	BGL 23,910

Table 2: Econometric analysis of WTP

Variable	**Parameter estimate**	**Standard error**
Intercept	-12,188***	3,444
Male (dummy)	1,426	923.5
Age	-67.302**	30.56
Monthly after-tax household income/family size	0.14028***	0.03841
Educational level (4 point scale)	569.03	501.6
Consideration of state of monasteries (5 point scale)	-658.36	487.8
Consideration of whether monasteries should be a priority for public spending (5 point scale)	641.20	473.6
Bequest value is more important than value to current generations (dummy)	648.85	1,035
Number of monasteries visited	106.08**	53.35
Feels personal sense of responsibility to preserve cultural heritage (5 point scale)	1,237.7***	410.2
Number of a set of five cultural categories has participated in over past year	3,351.9*	1,992
Positive attitude towards proposed programme (dummy)	426.99	459.9
Made a charitable donation in past year (dummy)	1,728.8*	981.4
N = 377, R^2 not provided. Asterisks indicate significance at: (*) 10% (**) 5% and (***) 1% levels.		

In addition, a probit model was used to test the effect of various factors on the probability of having non-zero WTP. The article discusses the finding that there appear to be different motivations behind magnitude of WTP, and whether to participate in paying at all, which are not shown up by a simple tobit model.

6. Comments

The econometric results indicate some consistency with prior expectations, as those who feel a sense of personal responsibility towards preserving cultural heritage, those who engage in broader cultural activities and those who have visited the most monasteries have higher WTPs. Consistency with economic theory is shown by the fact that income is also a significant predictor of WTP.

Protest zeros were removed from the sample via a question which asked for reasons for not being willing to pay. Statements indicating that the Government, church or visitors should pay, or a lack of confidence in the ability of the authorities to implement the plan, are example indications of protest zeros. Because of the high number of zero WTP responses, it is also tested whether there is a sample selection bias in the results. The authors find insufficient evidence of self-selection bias to cause concern.

The survey provided evidence that non-use values were a factor in respondents' WTP: over 30% mentioned losses for future generations as more important than enjoyment of present generations (indicating bequest value) and only 13% disagreed with the statement "monasteries have a value even for those people who do not visit them."

7. Suitability for Value Transfer

Monasteries may occupy a cultural niche in Bulgaria which is not replicated in other countries, particularly countries which have not undergone official disapproval of religion. Moreover, the monasteries include two World Heritage Sites, which are in many respects unique; Rila in particular is of national importance.

In terms of decision making context, the importance of cultural preservation relative to competing targets for public spending may be higher in other countries, particularly countries which are not undergoing similar political and economic transition. Finally, the bid function contains some variables with significant coefficients which would be difficult to replicate in value transfer (e.g. sense of responsibility, cultural participation).

8. Abstract

Bulgarian Christian Orthodox monasteries are an important component of the country's cultural, artistic, historical and religious legacy. They are widely regarded as sanctuaries of national consciousness, cultural continuity and tradition, and may possess a broad recreational and economic potential. This study presents and discusses the results of a contingent valuation survey of Bulgarian monasteries, including World Heritage Sites such as the Rila Monastery. The findings suggest that, on average, Bulgarians attribute a significantly positive value (about 0.1% per capita GNP) to the conservation and restoration of their Christian-Orthodox monasteries. The implication is that damages to these cultural goods are undesirable and the public would be willing to pay positive amounts to avoid them or to slow the rate at which they occur, despite the country's difficult economic and political situation. Non-use values were found to be important determinants of WTP.

Navrud and Strand (2002)

1. Study Reference

Navrud and Strand (2002), 'Social costs and benefits of preserving and restoring the Nidaros Cathedral', Chapter 3 in Navrud and Ready (2002).

This study is also reported in: Navrud, S., P. Pedersen and J. Strand (1992) "Valuing Our Cultural Heritage: A Contingent Valuation Survey", Centre for Research in Economics and Business Administration, Oslo.

2. Heritage Asset

The study concerns Nidaros Cathedral in Trondheim, Norway, the oldest medieval building in Scandinavia, and according to the authors, "perhaps even the most important cultural monument in Norway". The Gothic cathedral, the oldest still-existing parts of which date from the mid 12th century, was built over the grave of the patron saint of Norway, St Olav, and is also the home of the Norwegian crown jewels. The western front is covered with sculptures exposed to air pollution, only a few of which are original.

3. Economic valuation methodology

A contingent valuation survey of visitors to the cathedral was undertaken in 1991 (one of the first ever CV applications to cultural heritage). This took the form of an open-ended WTP question in face-to-face interviews. The sample was randomly selected. Four sub-samples were used which differed as follows: whether Norwegians or foreigners were interviewed, the payment vehicle used, whether contextual information on air pollution was given, and whether respondents were asked specifically to give separate WTP figures for all Norwegian built heritage and for the cathedral.

4. Valuation Scenario

The cathedral is currently at some risk of corrosion from air pollution. The study attempts to estimate the relative value of retaining the cathedral in its present state (through preserving it) over allowing it to degrade and restoring it. WTP is sought for two protective measures: (1) reduced air pollution so that the present state of cathedral is maintained (including present original features); and (2) no decrease in air pollution, but a programme of increased maintenance and restoration (meaning that some original features may be lost).

5. Valuation Results

Two hundred and thirty seven people were approached, of which 163 were actually interviewed. Foreigners made up 25% of the sample.

The mean WTP per person (in 1991 NOK, £1 = 11.4 NOK) for protecting all cultural monuments in Norway was 1,160 NOK (s.e. = 1,749); mean WTP for preserving cathedral was 318 NOK (s.e. = 475), and for restoring the cathedral was 278 NOK (s.e. = 440). The mean WTPs for preservation and restoration are not statistically different at the 5% level. Only 14% of the WTP to preserve the cathedral was found to be motivated by use value. The mean WTP for preservation was slightly higher than that for restoration in all sub-samples.

There was no significant difference in WTP between men and women or according to the number of visits to the cathedral respondents had made. Foreigners' mean WTPs were 63% (restoration) and 76% (preservation) of those of Norwegians. Foreigners were also approximately three times more likely to register a zero WTP.

An upper bound on the aggregate benefits of preserving/restoring Nidaros Cathedral amongst Norwegians was estimated by multiplying the non-use component of the WTP with the adult population of Norway. The aggregate figures were 810-900 million NOK for preservation and 710-825

million NOK for restoration (the lower figure using the more conservative mean WTP of the sub-sample which was tested for embedding and the upper figure using overall mean WTP).

A table showing mean WTP for all sub-samples and for both the preservation and restoration is scenarios is included in the study.

6. Comments

The study gives particular attention to the question of embedding, and also tests for non-use components of value. The authors' own conclusions on whether there is evidence for embedding effects or not are inconclusive. They initially conclude that there is no serious evidence for embedding effects; although WTP to protect the Cathedral was a substantial proportion of WTP to protect all sites in Norway, this is unsurprising as the Cathedral is one of Norway's most important monuments, and visitors had already shown an interest in it by visiting it. However, average WTP was 20-25% higher from those respondents who had not separately been asked their WTP for all Norwegian built heritage; this represents a "certain but perhaps not very large embedding effect".

WTP responses for those asked to contribute to a voluntary fund and those asked to contribute through tax were practically identical, indicating no payment vehicle bias. However, aggregate WTP figures are likely to be too high because of the self-selecting nature of the sample (i.e. they have already shown they value the cathedral by visiting it). Also, the study does not include a detailed discussion of socio-economic determinants of WTP or of consistency with economic theory.

7. Suitability for Value Transfer

While the valuation scenario is well specified and relevant to a decision making context of marginal changes, the transferability of results are limited by the small sample (particularly for foreign visitors), fairly unique symbol of national identity and lack of a reported bid function.

8. Abstract

The main purpose of this study was to elicit the value of protecting and restoring the Nidaros Cathedral in Trondheim, Norway, which is the oldest medieval building in Scandinavia. Thus, a contingent valuation (CV) survey of visitors to the cathedral was carried out in the summer of 1991.

This valuation exercise is of interest fro several reasons: (1) the Nidaros Cathedral is a major, and perhaps even the most important, cultural monument in Norway; (2) the study provides information about the relative value of retaining the cathedral in its present state, versus restoring it in the future; and (3) the study provides information on the methodological aspects of the CV method in an area of application where few studies had been conducted at the time.

Pollicino and Maddison (2002)

1. Study Reference

Pollicino, M. and Maddison, D. (2002), 'Valuing the impacts of air pollution on Lincoln Cathedral', Chapter 5 in Navrud and Ready (2002).

This study is also reported in: Pollicino, M and Maddison D (2001) 'Valuing the Benefits of Cleaning Lincoln Cathedral', *Journal of Cultural Economics*, Volume 25, Number 2, 131–148.

2. Heritage Asset

The asset under consideration is Lincoln Cathedral in the east of England, which was for the most part constructed in the 12th and 13th centuries. One of the major English cathedrals, it was the tallest building in the world until the late 19th century. The cathedral receives more than 250,000 visitors. The external west front displays a 12th century frieze containing several unusual figures (including a depiction of the torments of the damned and the story of Noah), some of which have been restored whilst others have been re-carved. The cathedral is "suffering significant damage" from air pollution.

3. Economic valuation methodology

The study uses the double-bounded dichotomous choice contingent valuation method. Surveys were undertaken face-to-face with a random sample of people in the centres of Lincoln (220 respondents) and other nearby towns (Grantham, Louth, Market Rasen and Sleaford, 108 respondents in total).

4. Valuation Scenario

Respondents were asked their WTP to change from a 40-year cleaning cycle to a 10-year cleaning cycle for the cathedral exterior. This was illustrated by the use of photographs showing particular details of the cathedral (e.g. a particular statue) both twenty and five years after cleaning (i.e. mid-way through each of the proposed cycles). It was emphasised that only the appearance of the cathedral would be changed (no other renovation work, while the corrosive effects of air pollution were not mentioned to respondents) and that the cleaning method would not damage the stonework. The survey did not present a scenario reducing air pollution, so it is unlikely that respondents considered health or other benefits in their valuation. The four starting points for the double-bounded dichotomous choice were: £5 (followed by £3 or £10), £20 (followed by £15 or £30), £35 (followed by £25 or £50) and £60 (followed by £40 or £100).

5. Valuation Results

The mean WTP of respondents in Lincoln itself was £49.77 per household per year, whilst from those outside Lincoln it was £26.77 (1998 £). Ten percent of valid responses indicated a zero WTP. The demographic profile of the sample is summarised in Table 1.

Table 1: Socio-economic characteristics of the total sample

Gender	
Male	50%
Female	50%
Highest educational attainment	
Primary school	10%
O levels	35%
A levels	18%
Professional qualifications	9%
First degree	21%
Higher degree	6%
Occupation	
Professional/managerial	34%
Skilled or semi-skilled	38%
Unskilled	11%
Economically inactive	17%
Average age	43 years
Average monthly after-tax household income	£1,298

The probability of a respondent agreeing to make a payment is tested econometrically using a probit model as reported in Table 2.

Table 2: Function explaining the probability of a respondent having a positive WTP

Variable	**Parameter estimate**	***t*-value**
Intercept	-2.533	-2.34
Respondent lives in Lincoln (dummy)	0.298	1.43
Male (dummy)	-0.198	-1.24
Age	-0.41 E-02	-0.60
Monthly after-tax household income/family size	0.51 E-03	2.31
Educational level	-0.60 E-02	-0.24
Starting point	0.037	0.04
Bid level	-0.057	-13.61
Respondent is a member of the National Trust or English Heritage	0.621	3.07
Is concerned about effect of air pollution on buildings	0.360	1.48
Visits cathedral more than twice a year	0.024	0.13
Thinks cathedral should be protected at all costs	0.264	1.89
Would not mind paying to protect cathedral	0.823	4.37
Thinks there are more important things to spend money on	-0.301	-2.51
LL function	-267.271	
R^2 not provided		

An aggregate WTP figure of £7.3 million is estimated by multiplying the Lincoln WTP figure by the population of Lincoln and the outside-Lincoln figure by the population of Lincolnshire excluding Lincoln. This represents a figure of £0.5 million per year of accumulation of dirt.

6. Comments

The study has a very thorough discussion of its own validity, concentrating in particular on starting point bias. As Table 2 shows, WTP appear to be positively correlated with starting point. The authors discuss the fact that this is a common drawback of the double-bounded dichotomous choice method, and admit to not finding an "entirely satisfactory solution to the problem."

The study used a pilot survey which asked respondents to comment on the valuation scenarios in terms of ease of comprehension and plausibility. Protest responses were identified by respondents who said that the Church, visitors, the Council or polluters should pay, and were excluded from the statistical analysis.

Embedding was not tested in the study, although the authors indicate that this is something that could be tested in future work.

The results show some consistency with prior expectations and with economic theory. For example, individuals who are members of the National Trust or English Heritage, or those who say they don't mind paying to protect the cathedral show significantly higher probability of having positive WTPs. Income is also a statistically significant determinant of probability of positive WTP.

7. Suitability for Value Transfer

This study details one of the most tightly defined valuation scenarios; the hypothesised change in the valuation scenario is easily understood and very specific, and is a change which could easily be visualised for other cathedrals. The west front of the cathedral is perhaps slightly more special than that of other cathedrals; it would be difficult to assess whether affection for the west front played any part in respondents' valuation. The bid function contains some attitudinal variables with significant coefficients which would be hard to adjust for value transfer.

8. Abstract

The objective of this study is to evaluate the gross benefits arising from a hypothetical cleaning programme applied to Lincoln Cathedral. These benefits are expressed in monetary terms through the implementation of a contingent valuation (CV) survey. The survey also probes individuals' attitudes and beliefs with regard to air pollution in general, and its impact on the cathedral in particular. Respondents were presented with different photographs which show the cathedral as it appears now, as well as how it would appear in the future under two different cleaning programmes. Individuals are informed that these cleaning programmes would impact to a differing degree upon the annual tax bill paid by their household. The individual is then asked which of the hypothesized cleaning programmes they would support. From these data household willingness to pay for the cleaning programmes can be inferred.

Pollicino and Maddison (2004)

1. Study Reference

Pollicino, M. and Maddison, D. (2004), 'Using Contingent Valuation to Value Maintenance Options for Oxford's Historic Buildings', unpublished paper, Institute of Archaeology, University College London and Institute of Economics, University of Southern Denmark.

This study is also reported in: Pollicino, M. (2002) "An In-Depth Investigation of Preferences Towards Cultural Heritage: The Contingent Valuation Method to Value the Damage from Air Pollution on Oxford Historic Buildings", Paper presented at the 12th Biennial ACEI Conference June 13-15, 2002, Rotterdam, The Netherlands.

2. Heritage Asset

Oxford, UK, features many historic stone buildings of architectural significance which are integral to the World Heritage Status of the city centre. The study focuses on seven buildings in Oxford: the Ashmolean Museum, St. Mary Magdalen Church, the Bodleian Library, the Old Town Wall, the Castle, Worcester College and a listed building in Cowley Road. These buildings typify the current situation in Oxford, being in need of attention to address the threat from natural weathering and air pollution generated by the city's traffic.

3. Economic valuation methodology

The study uses a contingent valuation method with a payment card (£0-200) elicitation format. The survey took place in 2001, conducting face-to-face interviews with 649 households in Oxfordshire. Respondents were presented with one of six questionnaires at random, presenting different combinations of valuation scenarios (see below).

4. Valuation Scenario

The valuation scenarios presented three different intervention strategies (cleaning, renovation and preservation) on different buildings, contrasting the state immediately before and twenty years after the intervention. The six different questionnaire variants were generated by (a) describing either unchanged levels or a reduction in air pollution in the future; and (b) by presenting either one, three or all seven buildings to respondents (the one or three buildings being chosen randomly). Computer-enhanced pictures were used to illustrate the differences in buildings' appearances.

Respondents were asked their maximum willingness to pay in the form of extra taxes to change from a 'no interventions' scenario to their preferred intervention scenario.

5. Valuation Results

The socio-economic characteristics of the survey sample were as follows: the average age of respondents was 42 years old; 47% of respondents were male; 48% of the sample lived in Oxford; the average family size was 2.56; 47% of respondents held higher education qualifications; average annual disposable income was approximately £34,000; and 22% of respondents were members of at least one cultural or historical association.

Respondents' preferred intervention was the preservation option, by a considerable margin (76%). Table 1 reports the mean and median WTP amounts for different policy interventions. Mean WTP per household per year was higher for the higher future pollution scenario – e.g. for the preservation option for all seven buildings it was £34.44 compared to £29.58 for the lower pollution scenario. However, median WTP was substantially lower than mean WTP for scenarios where only one building had been presented for the intervention. Marginal WTP appeared to decline with the number of buildings. Only modest differences in WTP were noted between the different policy interventions. In the econometric analysis income was found to be a statistically significant in determinant of WTP for all three intervention options.

Table 1: Mean and median WTP for different policy interventions

Intervention	Low pollution scenario Mean (median) WTP (£)		High pollution scenario Mean (median) WTP (£)	
	1 building	7 buildings	1 building	7 buildings
Cleaning	6.59 (0.00)	20.35 (7.39)	16.22 (1.66)	26.72 (16.23)
Restoration	9.19 (0.00)	19.94 (5.89)	18.28 (3.59)	24.80 (12.61)
Preservation	6.59 (0.00)	29.58 (22.85)	22.83 (14.35)	34.44 (28.98)

6. Comments

The analysis undertaken retains protest responses. There were 75 protest responses for the cleaning scenario, 71 for the conservation scenario and 75 for the restoration scenario (i.e. about 11% in each case). This was done on the basis that responses such as, 'the council/university/church should pay', 'the budget would not be spent in the promised way', and, 'the council cannot be trusted to undertake the designated work', were actually used by respondents to mask their true indifference to the intervention options. Exclusion of protest responses would increase the reported mean WTP, so on the grounds of providing conservative WTP estimates, protest responses are included.

The fact that income was shown to be a statistically significant determinant of WTP shows consistency with economic theory.

7. Suitability for Value Transfer

The valuation scenario is well specified and explained. Although the goods valued, and their context of the City of Oxford, are fairly unique, the inclusion of particular types of buildings perhaps offers some possibility of value transfer. The values found for certain buildings could perhaps in principle be transferred to other similar buildings; e.g. that of Worcester College to other Oxbridge colleges; that of the St Mary Magdalen Church to other churches of a similar age in other historic English cities; and that of the fairly generic listed building to other similar buildings.

However, the bid function is very specific to the study context and the regression coefficients found are not useful for value transfer (as every explanatory variable is multiplied by the number of buildings valued), i.e. the effect of income alone is not found in the regression analysis.

8. Abstract

This paper discusses the results obtained from a project investigating the potential role of contingent valuation in the management of Oxford's historic buildings. Despite their world renown these buildings are currently under considerable threat from natural weathering, ill-judged intervention strategies and above all from the air pollution generated by Oxford's traffic. The paper attempts to answer the following questions: What policy scenarios can realistically be implemented for Oxford's historic buildings? Which of them do residents of Oxfordshire prefer provided they are given sufficient and proper information? How much would they be willing to sacrifice from their households' budgets in order to support the various intervention strategies? And how reliable is contingent valuation for use in this context when many households are indifferent to the state of Oxford's historic buildings and others opposed to any intervention at all?

The study reveals that willingness to pay for different intervention strategies is shown to depend strongly on household income as well as on the scope of the intervention project. Willingness to pay is in some cases dependent on future levels of air pollution. The evidence to suggest that significantly different economic benefits are attached to different intervention strategies is more mixed. In particular, although individuals say that they prefer a policy of preservation rather than a policy of renovation or cleaning such differences are only apparent when one considers median rather than mean willingness to pay. This is an important finding since these intervention strategies imply markedly different costs. Given the World Heritage Site status of the city centre future research should seek to establish the willingness to pay of non-residents.

Poor and Smith (2004)

1. Study Reference

Poor, P.J. and Smith, J.M. (2004) 'Travel Cost of a Cultural Heritage Site: the case of historic St Mary's City of Maryland,' *Journal of Cultural Economics*, Vol. 28 No. 3 pp 217-229.

2. Heritage Asset

The study focuses on Historic St. Mary's City (HSMC) in southern Maryland, which is considered to be one of the most significant archaeological and historic sites in the US. The site, which dates from 1634 is approximately 60 miles southeast of Washington D.C. and featured the 17th century British Colonial capital of Maryland. It is recognised as a National Historic Landmark and covers approximately 1,100 acres. Current activities at the site include on-going archaeological research to uncover 17th century colonial artefacts which provide revealing information on the colonists' community and architectural attributes.

The site of HSMC was abandoned in 1695 and remained undisturbed until 1966 when the State of Maryland set up the Historic St. Mary's Site Commission to research and preserve the site. The HSMC Commission stewardship covers approximately 850 acres, consisting of around 200 excavated and recorded archaeology sites. The area also features reconstructed buildings depicting the original town layout.

3. Economic valuation methodology

Travel cost method – since multiple visits to HSMC are uncommon, a zonal travel cost model is employed rather than an individual travel cost model, which is typically employed when analysing unique recreational sites. The zonal travel cost model estimates a price-quantity relationship for HSMC by aggregating individual visitors into zones of origin, with visits measured in per capita or zonal population terms and the price variable in terms of average price per visitor per zone (calculated by the sum of round-trip travel distance costs, admission fee and a measure of the value of time spent travelling).

For the study, data on visitors were supplied by the HSMC Commission which surveys those visiting the site. In total there are 92 observations (in terms of zone of origin and based on postal zip codes) over the period 1999 to 2001, covering 328 individual visitors, and representing around 1% of the total paying individual visitors to the site.

4. Valuation Scenario

Since the admission fee charged at HSMC is minimal in relation to the operating and maintenance costs of the site, it does not fully reflect the visitor use value associated with the site. The study sought to estimate visitor demand and subsequent use value benefit derived by visitors. Visitor data is limited to planned, day-long visits to HSMC, so as to avoid problems of multi-purpose visit or destination costs.

5. Valuation Results

Reported regression results (ordinary least squares) are presented in Table 1, where the dependent variable is the number of visits per capita. While the linear model fails an F-test of overall explanatory power, both the semi-log and log-log models are overall significant at the 1% level and the log-log model provides a best fit in terms of R-squared value. The log-log model also outperforms in terms of significance of explanatory variables. The negative travel cost coefficient corresponds with prior expectations, suggesting that the quantity of visitors per 1000 zonal population is inversely related to price, i.e. the higher the price, the less is the number of visitors. However, the negative coefficient for income would appear to contradict economic theory, with higher income individuals making less visits. The authors posit the explanation that the remote rural

location of HSMC may make it less attractive to higher income urban individuals, a line of reasoning that has some empirical support from studies of rural recreation sites[9].

Table 1: Travel cost function predicting number of visits

Variable	Linear Model	Semi-log Model	Log-log Model
Dependent Variable	Log of No. of visits per 1000 zonal population	Log of No. of visits per 1000 zonal population	Log of No. of visits per 1000 zonal population
Intercept	-3.86 (3.10)	3.34*** (1.05)	1.26 (4.67)
Travel cost	-0.01** (0.00)	-0.02*** (0.00)	-1.26*** (0.14)
Income	-0.0000132* (0.00)	-0.0000117* (0.00)	-0.65* (0.37)
Ethnicity	0.003 (0.00)	0.02** (0.01)	0.52** (0.25)
Age	0.15 (0.10)	0.05 (0.03)	1.74* (0.93)
Dummy 2000	0.25 (0.23)	0.92*** (0.29)	0.91*** (0.25)
Dummy 2001	0.55 (0.66)	0.40 (0.2617)	0.43* (0.23)
F-statistic	1.48	10.17***	16.71***
R-squared	-	0.42	0.54
Log-L	-215.95	-132.32	-121.38

Notes: Standard errors in parenthesis; ***, **, * indicate significant at 1%, 5% and 10% level respectively. Number of observations for both models is 92 (annual zonal). Values in the table have been rounded from those reported in the study.

The study also reports price and income elasticity estimates for visitor responsiveness for changes in price (admission fee or travel cost component) or income. Price elasticity from the log-log model is slightly greater than one, with a 1% increase in travel cost corresponding to a 1.26% decrease in the number of visits (per 1000 zonal population) to HSMC. Income elasticity is negative (in the case of the log-log model the coefficient is -0.65), suggesting HSMC is an inferior good. As income increases, visitors are more likely to prefer alternative cultural activities.

Consumer surplus estimates are reported for both individual visitors and also in aggregate terms. Table 2 presents average (of the 3 years of data) CS estimates for individual visitors from the three models. The reported amounts are similar for the semi-log and log model (US$8.00 and US$9.93), but the value is estimated by the linear model is almost double (US$19.26). Also reported are average aggregate surplus amounts, again the estimate derived from the poorly fitting linear model is significantly greater than the two log variant approaches (by over $100,000). Given the greater robustness associated with the performance of the log-log model the authors assume that the welfare estimates derived from this model are the most reasonable.

Table 2: Consumer surplus estimates for HSMC

Year	No. of Visitors	Linear Model		Semi-Log Model		Log-Log Model	
		Individual Visitor	Aggregate	Individual Visitor	Aggregate	Individual Visitor	Aggregate
1999	9334	6.22	58,020	5.96	55,621	5.89	55,005
2000	10,064	16.41	165,100	14.91	150,095	10.20	102,612
2001	8767	35.17	306,533	8.93	77,816	7.90	68,864
Average	-	19.26	176,551	9.93	94,510	8.00	75,493

Notes: the paper does not state whether monetary estimates from 1999, 2000 and 2001 have been inflated or deflated to a common measure.

6. Comments

In particular the study highlights that estimates of consumer surplus in travel cost studies can vary significantly depending on the functional form used to estimate visitor demand. Specifically emphasis is placed on the goodness of fit criteria when assessing the robustness of individual consumer surplus estimates and subsequent aggregate values.

[9] Hanley, N.D. (1989) 'Valuing Rural Recreation Benefits: An Empirical Comparison of Two Approaches', Journal of Agricultural Economics, 40(3): 361-374.

7. Suitability for Value Transfer

The authors note that travel cost approach can only elicit non-market benefits to individual users of the HSMC site, and that non-use external benefits associated with the site can only be estimated through application of stated preference techniques. While the econometric results (particularly in terms of the log-log model) would appear to be reasonably robust, there is an absence of US based travel cost models for comparison of estimates. However, whilst the economic values (albeit use-vale only) would appear to be sound, the uniqueness of the HSMC would appear to limit the study's transferability.

8. Abstract

Historic St. Mary's City located in rural southern Maryland, marks the 17th century British Colonial capital of the State of Maryland. As with most cultural heritage sites, Historic St. Mary's City can be classified as possessing public goods-type characteristics, and as such, welfare benefit estimates must utilize non-market valuation techniques. To date, the primary valuation methodology used for cultural heritage sites research involves stated preference methods. This study is one of the first to employ a revealed preference methodology, the zonal travel cost model, to estimate the consumer surplus welfare measures of a cultural heritage site. The authors analyze three years of visitor sample data to compare three functional forms of visitor demand. The average of the annual individual consumer surplus measures ranged from approximately $8.00 to $19.26, depending on the functional forms used. When aggregated to the total number of individual paid visitors, the average annual benefit estimates range from approximately $75,492 to $176,550.

Riganti and Willis (2002)

1. Study Reference

Riganti, P. and Willis, K.G. (2002), Component and temporal value reliability in cultural goods: the case of Roman Imperial remains near Naples, Chapter 10 in Navrud and Ready (2002).

Aspects of this study are also reported in: Riganti, P. and Scarpa, R. (1998) 'Categorical Nesting and Information Effects on WTP Estimates for the Conservation of Cultural Heritage in Campi Flegrei', in Bishop, R.C and Romano, D. (eds.) (1998) *Environmental Resource Valuation: Applications of the Contingent Valuation Method in Italy*, Kluwer Academic Publishers, Boston.

2. Heritage Asset

Campi Flegrei is an archaeological park west of Naples, containing the ruins of a formerly prosperous Roman trading port. The ruins contain the third largest amphitheatre in Italy and the royal summer residence of the Roman Emperors (from the 1st century AD onwards). Local volcanic activity has also helped form a distinctive local geology. The site is not as well preserved as other remains in the area (such as Pompeii) as it is now partly submerged due to changes in sea level and fragmentation from urban development.

3. Economic valuation methodology

The study uses the contingent valuation method, based on two sets of face-to-face surveys, both on site and off site, of residents of the Greater Naples area in 1995 and 1997. The elicitation format used was dichotomous choice. The payment vehicle was "money given monthly to an independent agency", presumably voluntarily. The sampling method is not specified either here or in Riganti and Scarpa (1998).

4. Valuation Scenario

Respondents were asked their WTP to "preserve the cultural heritage located in Campi Flegrei" as well as components of Campi Flegrei, such as the area of Bagnoli, which is more industrially developed than the rest of the region. The level of preservation presented in the valuation scenario or the counterfactual is not described in detail.

5. Valuation Results

There were 484 valid results in the 1997 sample and 424 in the 1995 sample. The results are summarised in Table 1 (the WTP currency is not specified in the chapter but is assumed to be dollars):

Table 1: WTP estimates to protect Campi Flegrei and Bagnoli

Value estimated	WTP ($)
Conservation of Campi Flegrei (CF) (WTP_1)	28.81
Conserving parts of CF not open to public (WTP_2)	10.18
Preserving CF for future generations (WTP_3)	0.82
Conserving Bagnoli (WTP_4)	6.99
Preserving Bagnoli for future generations (WTP_5)	11.53

These results are for both the 1995 and 1997 samples combined, although the study also presents results for 1995 and 1997 separately. A table summarising the econometric analysis is not replicated here as many of the variables used in the analysis are not fully or even partially defined. It appears that bid level presented in the survey is a significant negative predictor of WTP, while income is a significant positive predictor of the first two, but not the latter three, values of WTP.

Statistical test showed that WTP for conservation of the Campi Flegrei (WTP_1), which encompasses all use and non-use motivations was larger than WTP for conserving parts of the Campi Flegrei not open to public (WTP_2) as well as WTP for preserving the Campi Flegrei for future generations (WTP_3) and WTP for conserving Bagnoli (WTP_4). However, there were mixed findings in relation to differences between WTP for conserving Bagnoli (WTP_4) and WTP for preserving Bagnoli for future generations (WTP_5) and also for preserving the Campi Flegrei for future generations (WTP_3) and WTP for preserving Bagnoli for future generations (WTP_5)

6. Comments

The purpose of the study is to test embedding effects and the importance of bequest value within the overall value of the cultural asset. However, there is not much discussion of the results above expressed in the equalities above, apart from a summary of the existing literature. Riganti and Scarpa (1998) notes that "the study was explorative in nature and was not designed to produce conclusive results".

It is not clear how bequest value is distinguished from other non-use or use values. Protest bids and outliers are removed from the samples.

7. Suitability for Value Transfer

The site has some unique characteristics but could possibly be compared with other Roman sites in Italy. The valuation scenario is not particularly well-defined; it is not really clear what the respondents are being asked to value. This is partly because the study was designed more to test embedding effects than to actually determine WTP for a proposed action at the site. Therefore the WTP values are somewhat vague and it would perhaps be difficult to transfer them to another site. Several aspects of the study (payment vehicle, variables used in econometric analysis) have not been defined.

8. Abstract

The study is based upon one of the most important Roman sites in Italy: Campi Flegrei, an archaeological park west of Naples. Campi Flegrei is an important area of Roman remains which, because the sea level is now higher than that in ancient Roman times, lies partly under the sea where some remains are still located, uncatalogued and unresearched.

The ultimate test of contingent valuation (CV) is criterion validity: how accurate is CV in predicting what actually happens in the real world; that is, how good is CV at predicting quantities demanded of a resource at various prices. However, the accuracy of non-use or passive use values can only be assessed in terms of content validity, and theoretical expectations to assess whether mean WTP values are significantly different for the whole of an archaeological good compared with its components: whether mean values of components are significantly different from each other; and whether there is a temporal stability in mean WTP values over a short time period (two years). The study reveals that people have different values for different elements of cultural goods. It also shows the possibility of minimizing the bias of CV estimates of welfare measures, using appropriate questionnaire design.

Santagata and Signorello (2000)

1. Study Reference

Santagata, W. and Signorello, G. (2000), 'Contingent Valuation of a Cultural Public Good and Policy Design: the Case of "Napoli Musei Aperti"', *Journal of Cultural Economics*, 24: 181-204

2. Heritage Asset

The cultural asset in question is a scheme ("Napoli Musei Aperti", or NMA) which both allows numerous historic buildings and monuments in the centre of Naples to be open for public access and enhances the visitor's experience of them. The scheme encompasses 29 churches, eight aristocratic palaces, eight historic squares and a museum, mostly in the historic Roman and Spanish quarters. Before the program began, these cultural assets were closed and not restored. The whole of central Naples is a World Heritage Site, and it is estimated that the monuments in the scheme receive over 800,000 visitors per year.

3. Economic valuation methodology

The contingent valuation method was used with a single-bounded dichotomous choice format with ten payment levels. The sample was stratified according to socio-economic characteristics; it is implied, though not explicitly stated, that interviews were conducted face-to-face.

4. Valuation Scenario

Respondents were asked how much they would be willing to pay to keep the NMA scheme running in the event of public funding being required to be diverted to more pressing social expenditure. Respondents were told that this payment would be voluntary and would be administered by a not-for-profit body rather than the local government (to reduce the chances of protest votes through mistrust of local government).

5. Valuation Results

Average WTP to keep the NMA running was found to be 17,000 ITL (1997 ITL) per person per year. Overall, 48% of valid responses indicated a zero WTP. This is a high number of valid zero responses, and seemed to indicate a fairly widespread indifference towards the running of the NMA. The results for users and non-users of the monuments in question different markedly; average WTP for users was 24,000 ITL, but for non-users was 8,000 ITL, with 34% of the former group and 67% of the latter group indicating a valid zero WTP.

The demographic profile of the sample is summarised in Table 1 and the econometric analysis (using logit and tobit models) in Table 2.

Table 1: Some socio-economic characteristics of the sample

Male	49%
Female	51%
Mean years of educational instruction	10.6
Mean no. household members	3.5

Table 2: Econometric analysis of probability of 'yes' response to a given bid level (logit model) and of WTP (tobit model)

Variable	**Parameter estimate**	***T*-statistic**	**Parameter estimate**	***T*-statistic**
	Logit model		Tobit model	
Intercept	-1.1	-1.5	-34,127	-2.1
Bid level	-0.20 E-04	-5.0		
Annual expenditure on cultural goods	0.34 E-05	3.2	0.06	-3.2
Has previous knowledge of the NMA program	0.86	2.6	29,546	3.9
Number of past visits to NMA sites	0.01	2.3	2,560	3.2
Age	-0.98 E-02	-1.4	-316.8	-2.1
Sex	0.11	0.5	531.3	0.1
Years of educational instruction	0.04	1.4	246.6	0.4
No. household members	0.04	1.4	94.06	0.1
Five dummy variables for various districts of Naples	various	not significant	various	not significant

In the logit model, the coefficients on bid level, cultural expenditure, previous knowledge of the program and number of previous visits to NMA sites are all significant at the 5% level. In the tobit model, the coefficient on age is also significant, while the bid level is excluded. Sex, education, no. in household and district of residence have no significant effect on WTP or likelihood of accepting the bid.

6. Comments

Protest bids were identified by asking respondents their reasons for having zero WTP. The authors note that the number of protest bids was "not substantial"; however, they state they have "used the strategy of considering them as real zero bids". This is contrary to standard practice, and makes for a conservative estimate of real WTP. The cultural asset may be slightly vulnerable to embedding concerns, given that there are churches and other monuments not included in the NMA. Also, the study does not discuss the possibility that some respondents may have stated a positive WTP because they had an economic interest in keeping the NMA running, i.e. respondents benefiting from tourist revenues such as hotel-owners.

The authors note that as well as free riders, i.e. respondents who state zero WTP but do actually make use of the good, there are two other types of respondents to be aware of: 'easy riders' and 'overrides'. Easy riders have a stated WTP of zero, but a non-zero annual expenditure on culture. Overrides state a WTP for the NMA scheme which is greater than their stated annual expenditure on culture. The authors note that removing these respondents from the econometric analysis improves the significance of all coefficients (this is done in an appendix and not in the main analysis itself).

It is difficult to discern the effect that non-use value might have had on responses. On the one hand, it is primarily access to the monuments which is being values, though the NMA scheme also includes an element of monument upkeep; furthermore, respondents may have included altruistic elements in their values.

Respondents' income does not appear to have been considered in the econometric analysis, therefore it is not possible to judge whether the results conform to the expectations of economic theory.

7. Suitability for Value Transfer

It is possible that the study could be used for value transfer for similar schemes in other historic Italian cities such as Siena or Florence, although in these cities respondents would perhaps be more likely to draw an association between the scheme and possible tourist revenues. It is also possible that residents of these towns might even have a *negative* WTP for such a scheme, as they may be bothered by tourist congestion. The lack of analysis of the income of respondents could be a serious drawback in value transfer as Naples is a noticeably poorer city than many other Italian tourist destinations.

8. Abstract

The aim of the paper is twofold: to report on the application of a contingent valuation survey to determine the value to the Naples population of maintaining "Napoli Musei Aperti", a cultural public good provided by the city of Naples, and to explore some alternative schemes of cultural policy. The paper presents some results of the contingent valuation study and discusses the use of the contingent valuation as a policy instrument in the public cultural sector.

Scarpa et al (1997)

1. Study Reference

Scarpa, R., Sirchia, G. and Bravi, M. (1997), 'Kernel vs. Logit Modelling of Single Bounded CV Responses: Valuing Access to Architectural and Visual Arts Heritage in Italy', Chapter 12 in Bishop, R.C and Romano, D. (eds.) (1998) *Environmental Resource Valuation: Applications of the Contingent Valuation Method in Italy*, Kluwer Academic Publishers, Boston.

2. Heritage Asset

The asset is the Rivoli Castle in Piedmont, northern Italy. The Castle (actually more of a palace), which was built in the 17th and 18th centuries but never completed, was intended as a residence for the Italian royal family. It has housed the Museum of Contemporary Art since 1984. The collection is heavily weighted towards Italian contemporary artworks, although it also contains some work by foreign artists, with both permanent and temporary exhibitions. As well as acting as a site for preserving architectural heritage and modern art, the Castle provides landscape amenity benefits to local residents. Collectively the residences of the Royal House of Savoy in Piedmont constitute a World Heritage Site, and the Rivoli site alone attracts about 30,000 visitors per year.

3. Economic valuation methodology

The study employs the contingent valuation method using face-to-face interviews with a random sample of visitors to the site. The elicitation format used was single-bounded dichotomous choice with twelve different bid levels.

4. Valuation Scenario

Respondents were asked their annual WTP to maintain current access rights to the castle (i.e. entrance upon payment of a fee) against an alternative scenario of closing the site to the public. Respondents were told that the money would go to a special independent agency charged with maintaining the castle. Details of payment vehicle (i.e. whether this would be voluntary) are not given.

5. Valuation Results

Mean WTP was 53,000 ITL (1995 ITL) while median WTP was 41,000 ITL. Socio-economic characteristics and econometric analysis are not reported.

6. Comments

This is a very technical theoretical paper whose purpose is to discuss differences in parametric and non-parametric mean WTP estimates rather than analyse the results in the context of the cultural asset. In addition, there is no commentary on whether it is access to art or to the Castle which is being valued and landscape amenity benefits are not discussed.

The study avoids embedding effects by presenting a benefit to respondents which is very easy to consider in their judgements of their own preferences (i.e. access to the castle). However, the paper does not include discussion of whether altruistic elements of non-use value were included in WTP.

7. Suitability for Value Transfer

The study is not suitable for value transfer as no bid function is included and very little discussion of the possible factors influencing respondents' WTP is given.

8. Abstract

This paper presents the results from a contingent valuation study carried out to value the yearly amount users are hypothetically willing to pay to maintain Rivoli Castle under a regime of public access. Since estimated welfare measures are sensitive to econometric specifications this study provides a comparison between welfare estimates derived under the more conventional random utility specification, parameterized in the logit format and nonparametric univariate kernel estimates.

Signorello and Cuccia (2002)

1. Study Reference

Signorello, G. and Cuccia, T. (2002), 'Estimating and Capturing Non-market Use Value of Heritage Cities: The Case of Noto', Chapter in Rizzo, I. and Towse, R. (2002), *The Economics of Heritage: A Study in the Political Economy of Culture in Sicily*, Edward Elgar Publishing

2. Heritage Asset

The study concerns preservation of the historic former centre of the southern Sicilian town of Noto. Noto was a provincial capital for nearly a millennium until its role was superseded by Syracuse in 1817. The existing buildings of old Noto were almost all built in the Baroque style following a destructive earthquake in 1693; the same is true of seven other towns in the area (including Catania and Palazzolo), and the eight collectively constitute a World Heritage Site. In Noto, the old quarter is no longer the centre of activity in the town. Although some buildings have suffered from seismic damage (including the cathedral, whose dome has collapsed) and neglect, many buildings have been restored in recent years due to UNESCO funding.

3. Economic valuation methodology

The study uses a contingent valuation survey carried out through face-to-face interviews with tourists, randomly sampled apart from quotas to ensure equal numbers of Italians and foreigners. Double-bounded dichotomous choice and open-ended elicitation formats were both used.

4. Valuation Scenario

The study seeks respondents' WTP for a hypothetical entrance fee for adult tourists to the historic quarter. As this area is no longer the economic centre of Noto, it was deemed that this would be a practically feasible suggestion. Respondents were told that this fee would be dedicated to maintenance and conservation of the historic buildings.

5. Valuation Results

Mean WTP for the whole sample for access to the historic quarter was estimated at 11,500 ITL (2000 ITL). This varied insignificantly between foreign and Italian tourists. Only 7% of valid responses replied 'no' to both bid levels presented to them.

The demographic profile of the sample is summarised in Table 1 and the econometric analysis (using a logit model of the probability of accepting a bid level) in Table 2.

Table 1: Socio-economic characteristics of the sample

Male	52%
Female	48%
Mean age	44.2
Mean educational level (1-4 scale)	3.2

Table 2: Econometric analysis of likelihood of accepting the bid

Variable	Parameter estimate	*T*-statistic
Intercept	1.93	2.9
Bid level	3.26 E-04	-14.2
First visit	0.76	2.5
Age	1.84 E-03	0.2
Gender	-0.36	-1.7
Educational level	0.37	2.6
Membership of a cultural heritage organisation	0.31	1.1

The coefficients on bid level, whether it's the respondents first visit and educational level are significant at the 5% level. Age, membership of a cultural heritage organisation and gender do not appear to affect the likelihood of accepting the bid.

The WTP results were used to construct a demand curve and estimate the entrance fee which would maximise revenue, which was found to be 10,000 ITL.

6. Comments

The fact that Italian and foreign tourists have an identical mean WTP shows that it was purely the access to the good which was being valued, and not any non-use value associated with the maintenance or restoration work (which would be likely to be higher amongst Italians). Protest bids accounted for 16% of the sample and were identified through a question asking for reasons for a zero response to the open-ended WTP question. These were mostly people who thought that an entrance fee was unfair and not legitimate, or that the Local Authority should pay.

It is unlikely that there were any embedding problems, as the scale of the good was well-defined and presumably easily envisaged by respondents. Income was not included in the econometric analysis, so it is not possible to test survey results against economic expectations.

7. Suitability for Value Transfer

The study could possibly be used for value transfer to the other late Baroque towns of the Val di Noto region which make up the World Heritage Site, providing that it is use value by tourists that is being estimated and not non-use value or use value by locals. Some of the respondents who indicated a zero WTP stated that if they were asked to pay, they would simply go to another site, suggesting that the towns are to some extent substitutable.

8. Abstract

As a result of reduced real budgets and increased demand, public policy makers are focusing attention to charge for use of heritage cities. To capture the economic benefits accruing to visitors, it is necessary to trace out the demand curve and how that demand varies across the population of users. In this chapter we present an empirical case study where the contingent valuation method is used to obtain this kind of information for Noto, an Italian heritage city well known for the Baroque style of its historical monuments and buildings. The CV study intercepted on site a random sample of national and foreign visitors. In the questionnaire, the valuation question was posed according to the double bounded dichotomous choice format. The demand curve and users' benefits are estimated by using a linear logit model. The estimated demand curves are applied to assess the charge that would raise maximum revenue-capture potential.

Whitehead and Finney (2003)

1. Study Reference

Whitehead, J.C. and Finney, S.S. (2003) 'Willingness to Pay for Submerged Maritime Cultural Resources', *Journal of Cultural Economics*, Volume 27, Number 3-4, 231 – 240.

2. Heritage Asset

In this study, the authors consider the non-market benefits generated by the management of submerged maritime heritage assets. The study focuses on North Carolina, where over 5,000 shipwrecks lie off the coast (an area known as the 'graveyard of the Atlantic'). Although not provided in the paper, respondents were presented with the definition of historic shipwrecks. The study area includes the Outer Banks of North Carolina (the 'graveyard') and the town of Manteo, which is considered to be the gateway to the Outer Banks.

3. Economic valuation methodology

Contingent valuation – double-bounded dichotomous choice. Responses were elicited via a telephone survey of North Carolina residents in 2001. Completed surveys totalled 913 (representing a 46% response rate) with 884 usable responses.

4. Valuation Scenario

Respondents were asked their willingness to pay for the creation of a historic shipwreck state park. Additional state funding is required for the park, which would serve to protect the most important wrecks from treasure hunters. In the dichotomous choice format, respondents are presented a referendum question concerning an estimate of the cost of setting up the park as a one-time increase in state taxes. Eight WTP scenarios were employed. Firstly two park sizes were investigated (50 or 100 protected wrecks) with four different prices (US$10, US$30, US$60, US$90). The double-bounded question was then presented as a follow up, where those responding yes to the first WTP question were presented with a variation where the size of the park was increased by 2.5 and the price doubled. Respondents answering no to the initial WTP question were presented with a park size divided by 1.25 and the price halved.

5. Valuation Results

In the survey, average household income was US$37,210, average household size was 2.44, average age almost 50 years and average education 13.4 years. Sixty-three percent of the sample was female. Willingness to pay models were estimated via a probit model and a random effects probit model, for single bound (information from the 1st WTP question only) and double-bounded (information from the 1st WTP question and the follow-up WTP question) responses respectively (see Table 1). For both the single and double bound WTP models, two versions were estimated, one including only economic variable (income, one-time tax amount, size of park, on site use prices) and a second also including demographic variables.

Table 1: Willingness to pay models

Variable	Single-bound Models		Double-bounded Models	
	Economic variables only	Econ. & demo. vars.	Economic variables only	Econ. & demo. vars.
Constant	1.85 (0.07)	-146.71 (-2.40)	-13.44 (-0.70)	-145.22 (-2.78)
Size of park	-0.12 (-0.47)	-0.12 (-0.52)	-0.01 (-0.10)	0.07 (0.65)
Cost of travel to marine park	-0.20 (-1.81)	-0.19 (-1.88)	-0.19 (-1.95)	-0.16 (-1.74)
Cost of travel to substitute site	0.21 (1.34)	0.18 (1.21)	0.34 (2.35)	0.30 (2.03)
Household income	1.24 (2.88)	0.53 (1.34)	1.01 (3.04)	0.38 (1.00)
White	-	14.05 (1.05)	-	16.21 (1.25)
Male	-	19.56 (1.57)	-	15.69 (1.32)
Married	-	-25.90 (-1.74)	-	-29.14 (-2.04)
Household size	-	12.19 (2.03)	-	13.69 (2.49)
Education	-	12.12 (3.67)	-	11.11 (3.80)
Age	-	-0.30 (-0.78)	-	-0.62 (-1.56)
Summary Statistics				
Sigma	142.20 (4.82)	129.51 (5.20)	42.00 (5.41)	51.06 (4.56)
WTP	38.20 (4.30)	38.99 (4.78)	34.15 (5.21)	32.82 (4.80)
Shift	-	-	-47.12 (-4.50)	-54.67 (-4.26)
Anchor	-	-	0.52 (3.59)	0.54 (3.38)
Ro	-	-	0.92 (40.96)	0.88 (21.13)
Beginning LL	-610.57	-610.57	-1198.52	-1198.52
Ending LL	-587.11	-568.51	-1034.47	-1015.80
Sample size	884	884	884	884
WTP responses	1	1	2	2

Notes: t-ratios in parenthesis

In the economic variables only models, income is found to be statistically significant and WTP very sensitive to income (elasticity of WTP in the range 1.1 to 1.2). However, when demographic variables are added the coefficients are found not to be statistically different from zero, likely due to correlation with the demographic variables.

Reported WTP estimates (for a one-off increase in tax) range from US$38.20 to US$38.99 (per household) for the single bounded models and US$32.82 to US$34.15 for the double bounded models. Based upon the most conservative estimate, aggregate willingness to pay for the shipwreck park totals to US$27.9 million (US$ 2001), where the total population in the sample region is approximately 850,000 households. Expressed as an annuity (5% over 30 years) annual benefit from the park would be US$1.73 million.

6. Comments

The study survey was designed so that the issue of scope insensitivity could be explored. The empirical analysis found a positive and significant scale parameter in each of the estimated models, implying that as tax amount increases respondents are less likely to vote for the shipwreck park. However, in each model scope insensitivity was found, with respondents not perceiving the park with 100 shipwrecks to be more valuable than the park with 50. Although WTP is found to be insensitive to the scope of policy, the authors argue that this does not invalidate the results of the CV study. Primarily, WTP should be non-decreasing in scope (which it is) and also varying the size of the park from 50 to 100 shipwrecks amounts to a change in 1% to 2% of the total of 5000 shipwrecks – an indiscernible change for most. This point concerning insensitivity links to that discussed in Boyle et al (1994) and Hanemann (1994).

The authors also sought to investigate issues of incentive compatibility and starting point bias in the study. Incentive compatibility may arise in CV studies that use double-bounded dichotomous choice elicitation formats, since respondents who 'vote' yes to a proposal at given amount may believe, when presented with the same project at a higher bid amount the proposal is a waste of money. Conversely, those who vote against the proposal at some initial amount may perceive the proposal to be of lower quality when presented with the same project at a lower bid amount. In both instances, there is incentive for the respondent to vote against the proposal in the second bid question regardless of their true WTP, resulting in an underestimate of WTP. As stated above, WTP estimates from the first question (i.e. the single-bound model) are higher than WTP estimates from the second WTP question (the double-bounded model). This negative shift in WTP amounts implies a degree of incentive incompatibility. In addition an anchoring effect (or starting-point bias) is also found, with WTP from the second question found to be a function of the starting WTP bid amount presented to respondents. Such observations, the authors argue are likely to be due to the scope insensitivity issue – if respondents do not consider the change in the scope of the project to be significant, then an insignificant change in scope should not affect the incentive compatibility of the follow-up WTP question.

7. **Suitability for Value Transfer**

This study would appear to be unique in that is the only valuation exercise that has been carried out for submerged maritime heritage. The estimated WTP amounts are particularly tied to the valuation scenario; that is the creation of a state park to preserve a specific number of wrecks. This implies that the study results would be unsuitable for transfer to contexts where an estimate of the benefit from preserving a single shipwreck was required. That said, the question of transferability is further complicated by the identified scope insensitivity of respondents, where no discernable difference in benefit is derived from preserving 50 or 100 wrecks.

8. Abstract

Many consider salvage value and tourism expenditures as the only economic values of a historic shipwreck. This paper looks at one alternative, the non-market value generated by management of shipwrecks as submerged maritime cultural resources. The authors consider the question how much people are willing to pay to maintain shipwrecks in their pristine state. The contingent valuation method was implemented during summer 2001 as part of a telephone survey to households in eastern North Carolina. The authors estimate that households are willing to pay about US$35 in a one-time increase in state taxes. Willingness to pay is internally validated by expected relationships with prices and income but fails to pass the scope test. The double-bounded willingness to pay questions are not incentive compatible and are subject to starting point bias, despite efforts to minimize these effects.

Willis (2002)

1. Study Reference

Willis, K.G. (2002) 'Iterative Bid Design in Contingent Valuation with an application to the Bosco di Capodimonte Park in Naples', *Journal of Cultural Economics*, Vol. 26, No. 3-4, 307-324.

2. Heritage Asset

The Bosco di Capodimonte covers 143 hectares of woodland north of Naples, Italy. The Bosco park is adjacent to the Capodimonte Palace and gardens, which were built in the mid 18th Century by Charles III, King off Naples, and was used a royal hunting ground. The Bosco features several buildings, including a famous Royal China factory which made Capodimonte porcelain, the Cellaio (a store for agricultural products), the Royal Stables, the Royal Shooting Lodge, the church of St. Gennaro, and the Hermitage. The landscape comprises of three types. There are formal avenues of trees (including iloxes, lindens, horn-beams, downy-oak and shrub hedges), with paths, fountains and sculptures. Other areas are irregular with trees (including camphor, cedar, eucalyptus, magnolia, yew, camellia, oak, hackberry and Mediterranean pine) separated by open space. Finally, some 10 hectares is devoted to lawns that feature an 18th Century irrigation system.

The author points out that the Bosco may be viewed as both a cultural good (a park with both historical buildings and landscapes) and also as an environmental good, which can be used for recreation independent of its cultural good nature.

3. Economic valuation methodology

Contingent valuation – iterative bidding (IB). The survey was undertaken during the summer of 1999, with 494 completed questionnaires collected. Respondents were sampled at one of the two entry points to the Bosco. Respondents were presented with one of three IB cards and asked how many times they would visit the Bosco in a year if they had to pay the amount stated on the card (the 'bid' amount). If number of visits was greater than zero at the price, respondents were then shown the next price and asked how many times they would visit, and so on. Prices presented ranged from 1,500 lira to 4,000 lira (Card 1), 2,000 lira to 8,000 lira (Card 2) and 4,000 lira to 16,000 lira (Card 3).

4. Valuation Scenario

Rather than focussing on consumer surplus estimates of use and non-use to determine the economic value of the Bosco di Capodimonte, the study seeks to determine a revenue maximising price for admission to the Bosco. At the time of the study, entry to the Bosco was free of charge; however the body responsible for the management of the park were interested in charging an entry fee in order to pay for maintenance and conservation costs. The iterative bidding elicitation format allows a demand curve to be traced out through varying coordinates of bid amount and the proportion of the sample willing to accept that bid amount and therefore enabling a revenue maximising entry price to be estimated.

5. Valuation Results

Of the sample population, 76.3% of respondents lived in the Naples areas. Only 0.8% of respondents lived outside of Italy. Hence the estimated results apply to visits by Italians, in particular consumer surplus and a revenue raising price could only be derived for local residents.

A non-linear demand curve was estimated from the sample data, relating the bid amount and the proportion accepting that amount to the number if visits at that bid amount. From this a mean revenue maximising price of 5,131 lira per visit was estimated (CI: 4,219 lira to 6,545 lira). At this amount under a unitary pricing system (everyone pays this amount for entry) gross revenue would

be 534.8 million lira per year. The total number of visits would decrease from 283,313 to 104,225 per year. In contrast, the welfare maximising entry fee would be zero price[10].

6. Comments

The study also investigates the effect that different IB designs have on the estimated demand function and how this in turn affects the estimated revenue maximising price, in particular the effect of omitting different bid amounts. It was found that different IB designs produce a different revenue maximising price. In general, the greater number of bid levels, the more accurate the estimated function will replicate the demand curve. However, more bid levels require larger sample sizes to ensure accurate estimates of quantity demanded at each price.

7. Suitability for Value Transfer

As a heritage asset, the author compares the Bosco to other historic parks (although in the context of charges for entry, and not in the context of value transfer, it should be stated), such as Blenheim Palace in Oxfordshire, which is privately owned, or the Botanic Gardens at Kew, London, which is publicly owned, where there are charges for entry to cover the costs of maintenance (or as a means of rationing entry). However, information reported by the study focuses on deriving the revenue maximising entry charge, rather than estimates of the economic value derived from use and non-use benefits of the Bosco, or indeed any marginal changes in the provision of the heritage asset, which would be required in value transfer applications.

8. Abstract

This article explores the impact of changing the number and distribution of bid levels on the estimated revenue maximising price for entry to a local cultural good, namely the historic Bosco di Capodimonte park in Naples. Different iterative bid designs produce somewhat different estimates, through their effect on the parameters of the function modelling the demand curve for the good. The impact of bid design depends upon the function used, and the number and sequence of bid levels included or excluded in the design. The greater the number of bid levels, the greater the accuracy in estimating a revenue maximising price.

[10] The author reports that in 1999 prices 1,500 lira = £0.50 (= US$0.33) and 4000 lira = £1.33 (= US$2.00).

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