

ASSESSING BENEFITS OF CULTURAL HERITAGE SITE PRESERVATION: THE CASE OF CEBU SOUTH COASTAL ROAD PROJECT (SEGMENT 3)

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1. Introduction

Among the numerous environmental impacts of urban road development are damages to cultural heritage sites. This study aims to estimate the benefits of preserving cultural heritage sites in monetary terms to serve as input to project cost-benefit analysis. In estimating components of the total economic value (TEV) of the cultural heritage site, two types of valuation methodology are used, travel cost and contingent valuation to estimate indirect use or recreational value and non-use values, respectively.

2. The Case

The Cebu South Coastal Road (CSCR) project in Cebu City, Philippines is an Official Development Assistance project under Japan Bank for International Cooperation's Overseas Economic Cooperation Fund (Loan Agreement No. PH-P158). The loan, which was approved in 1995, amounted to 18,391 million yen (153.3 million USD) and consists of three segments, namely, (1) Talisay section (2) Causeway section, and (3) Viaduct cum Subway section. Segment 3 is further classified into: (3A) Viaduct section, (3B-1) Approach Section, and (3B-2) Subway (Tunnel) section (Figure 1 refers). At present, the construction of the first and second sections is almost finished. However, additional funding is still needed to pursue and finish the third segment which adopted a sub-surface alignment construction under a local cultural heritage site.

Prior to the actual sub-surface design, the sub-surface component, particularly segment 3B-2, has three alternative alignments, namely: (A) Widening of M.J. Cuenco Avenue along Plaza Independencia site; (B) Elevated highway structure across the Plaza Independencia; and (C) Sub-surface alignment across the Plaza Independencia. The study refers back to these alternatives to determine what value should be associated to cultural heritage preservation effort so as to rationalize additional fund requirement.

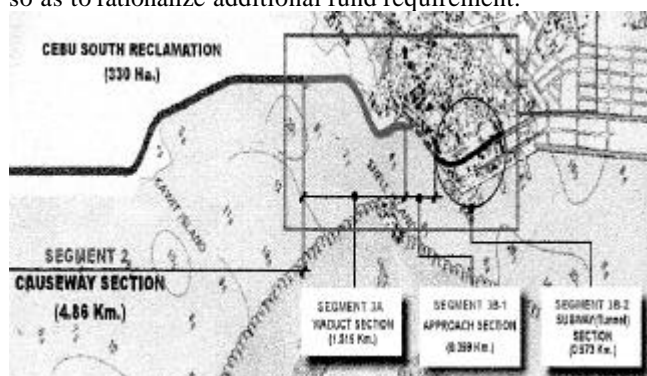


Figure 1. Segment 3 of the CSCR Project

The first alternative alignment is estimated to cost about 464 million PhP (8.6 million USD). A large portion of this cost is due to land acquisition. The second alignment or

the elevated alignment entails a cost 57 percent higher than first alignment and require the acquisition of land and the dismantling of some of the landscaping structures within the Plaza Independencia-Fort San Pedro complex. The sub-surface alignment marked the highest cost which is 91 percent higher than the first alignment and 22 percent higher than the second alignment. In this alignment, part of the existing landscape in Plaza Independencia will be dismantled. In addition, trees and plants that will be affected will be transplanted within the park but will be re-transplanted during landscape restoration works. Long-term traffic alleviation is only limited to the second and third alignments (i.e. elevated and sub-surface). Figure 2 shows the actual road alignment across the Plaza Independencia.

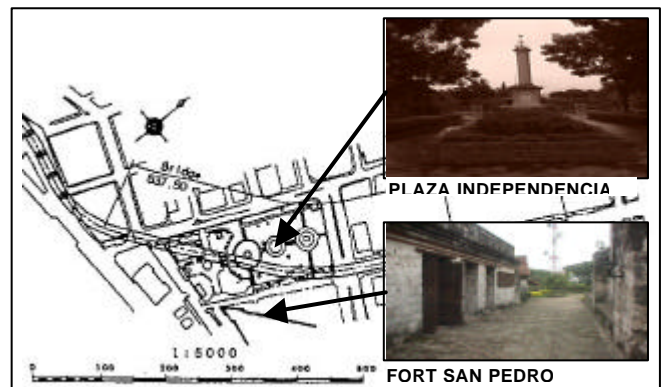


Figure 2. CSCR Alignment across Plaza Independencia-Fort San Pedro Cultural Heritage Sites

3. Assessing Benefits of Cultural Heritage

Cultural heritage sites are generally considered as public goods. Thus, it is good to decompose value according to respective environmental impacts under the framework of the total economic value. The TEV components include use and non-use values. Use values consist of direct or extractive use and indirect or non-extractive use, e.g. recreational benefit. On the other hand, non-use value is composed of option, bequest and existence value.

Travel Cost Method (TCM) and the Contingent Valuation Method (CVM) are the commonly used methodologies in valuing non-marketed goods. TCM is useful for analyzing recreational goods which can be indirectly priced using time and money cost of travel. TCM assumes that the change in total travel costs is equivalent to change in the number of visits. From this demand curve, the total benefit visitors obtained can be calculated in the form of consumer surplus.

In the TCM, the ordinary Marshallian demand model, which is the function of the price of the recreational good or generalized travel cost, was used as the travel demand function of each individual. Each cost include: (1)

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transportation cost; (2) opportunity (time) cost; and (3) access fees.

CVM, on the other hand, is a method used in valuing non-marketed environmental goods and amenities on the basis of the willingness to pay (WTP) for an improved environment. Two type of elicitation method were used in this study, open-ended for the pre-test survey and double-bounded discrete choice for the full-sample survey. The discrete choice method makes use of random utility maximization specifications.

4. Results

Face-to-face interviews were conducted to facilitate the questionnaires, as there is a need to explain clearly the required background information and the hypothetical scenario for valuation. For this purpose, maps are presented to help respondents identify the goods being valued. The pre-test and full-sample survey yielded 116 and 344 samples respectively.

Figure 3 shows travel demand curves of Plaza Independencia and Fort San Pedro, respectively. The expected relationship of declining number of trips as the travel cost increases were depicted in the models. Based on the figure, one can gather that visiting Plaza Independencia has higher utility than visiting Fort San Pedro.

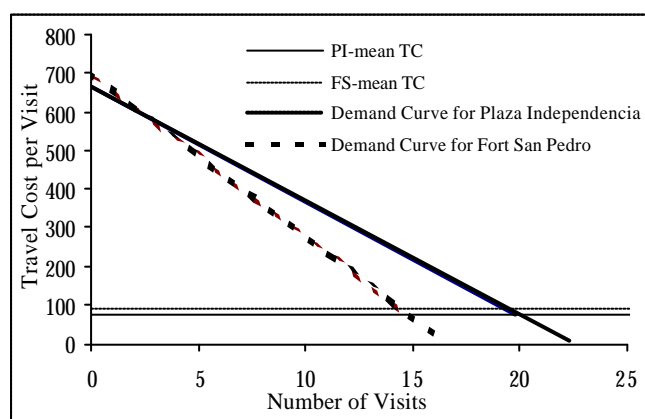


Figure 3. Recreational Demand Curves

Table 1 shows derived consumer surplus and its consequent average benefit per visit estimates. Annual recreational benefits of Plaza Independencia and Fort San Pedro were computed as 77.2 million PhP and 26.4 million PhP, respectively.

Table 1. Consumer Surplus Estimates

Destination	Consumer Surplus in PhP(USD)	Recreational Benefit per Visit in PhP (USD)
Plaza Independencia	5,093.39 (94.32)	257.54 (4.77)
Fort San Pedro	3,785.55 (70.10)	263.85 (4.89)
Both Sites	8,878.94 (164.42)	260.19 (4.82)

In terms of WTP, Table 2 shows the parameter estimates and the median values (\bar{C}) of the WTP per payment vehicle and alignment. Among the payment vehicles used, toll for the use of road registered lower values than entrance fees. Moreover, sub-surface alignment draw out higher values than the elevated alignment. The difference is greater for the Fort San Pedro additional entrance fee. For Plaza Independencia entrance fee, only minimal difference was observed.

Table 2. Parameter Estimates and Median of WTP

Payment Vehicle (Alignment)	Parameter <i>a</i>		Parameter <i>b</i>		<i>r</i> ²	\bar{C} in PhP (USD)
	Est.	t-stat	Est.	t-stat		
Entrance fee to Plaza Independencia (B)	3.21	14.21	1.71	17.32	0.08	6.53 (0.12)
Entrance fee to Plaza Independencia (C)	3.65	15.20	1.83	15.27	0.11	7.39 (0.14)
Additional entrance fee to Fort San Pedro (B)	2.82	13.75	1.63	15.52	0.08	5.64 (0.10)
Additional entrance fee to Fort San Pedro (C)	3.19	15.87	1.52	16.33	0.11	8.09 (0.15)
Toll fee (B)	3.89	12.03	2.28	12.84	0.09	5.50 (0.10)
Toll fee (C)	3.35	11.35	1.83	11.99	0.10	6.23 (0.12)

The following figure shows the probability distribution of WTP for different alignments and payment vehicles.

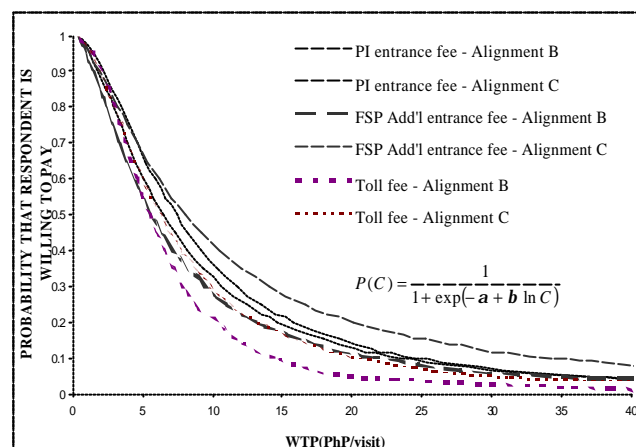


Figure 4. Probability Distribution of WTP per Payment Vehicle and Alignment

Estimates of TEV of the cultural heritage sites were only computed on the basis of the annual visitors of the site. Using estimated recreational benefits and WTP of non-users, present value for each alternative were computed using the 20 years project life and a 15 percent discount rate. The benefits estimates were about 74 and 78 percent of the respective construction cost of the elevated and sub-surface alignment. The estimates are however still conservative as the values were not extended to the actual extent of population.

A number of biases were observed during the conduct of study. Among these biases are: (1) difference in the probability of WTP in the open-ended and discrete choice elicitation format; and (2) inconsistent estimate of use value from TCM and CVM. The first may be related to the free riding and the perception level of the hypothetical scenario. The second, on the other hand, maybe due to the limitations in defining travel demand in international tourist cases.

5. Conclusions

The study was able to establish the importance of protecting the Plaza Independencia-Fort San Pedro cultural heritage sites on the context of the CSCR Segment 3 project despite larger investment requirement. The resulting benefit estimates made it clear that there are social/environmental benefits to preserving cultural heritage sites. The valuation framework can be used in cases of infrastructure project damage assessment and evaluation of alternative degree of cultural heritage preservation.