

Economic valuation of conservation of living heritage in Melaka City, Malaysia using single-bounded and double-bounded dichotomous choice contingent valuation method.

By: Chiam Chooi Chea
Open University Malaysia
chooi_chea@oum.edu.my

INTRODUCTION

Heritage experts regard economists as insensitive, focused too single-mindedly on financial measurement, overlooking the true cultural significance of heritage assets.

Heritage- Everyone's legacy,
Inherited from the past.

Stated Preference (SP)
method-Contingent
Valuation method
(CVM) both single-
bounded and double-
bounded CVM

CVM uses the concept
of hypothetical
markets to elicit the
mean value of either
WTP or WTA.

THE RESEARCH PROBLEM

- Living heritage (an irreversible loss)
 - Sense of belonging & identity, tourism industry
 - Need for conservation
 - FUND: Majlis Bandaraya Melaka Bersejarah (MBMB) implemented heritage charge RM2 per night in Melaka since April 2012 due to high traffic of visitors in the city- "World Heritage Site" by UNESCO in 2008.
- What is the mean WTP by visitors in Melaka City in conserving living heritage?

THE RESEARCH OBJECTIVES

□ The objectives:

- Estimate visitors' willingness-to-pay for living heritage conservation in Melaka City using single-bounded Contingent Valuation Method (CVM)
- Estimate visitors' willingness-to-pay for living heritage conservation in Melaka City using double-bounded CVM
- Highlight the results differences between single-bounded CVM and double-bounded CVM

LITERATURE REVIEW (1)

Author	Method(s) used	Place of study	Findings
Carson et al. (1995)	CVM to estimate cost of existence value. Stratified random sampling. Payment vehicle: A once-off tax payment	Alaska: The Exxon Valdez oil spill on Prince William Sound	Estimated the median of \$30.30 was multiplied with the number of English-speaking households in the USA to give a total WTP for the escort-ships programme of \$2.75 billion, which was interpreted as a lower bound value.
Carson et al. (1994)	CVM: Two scenarios were developed, differing generally in a qualitative way. (major impact and minor impact scenario)	The Kakadu Conservation Zone in Australia	For the major impact scenario, median interval was A\$100-A\$250 and the Weibull estimate was A\$143.26. For the minor impact, median interval was A\$50-A\$100 and Weibull estimate was A\$80.32

LITERATURE REVIEW (2)

Author	Method(s) used	Place of study	Findings
Carson et al. (1997)	CVM and Delphi methods	The Fes Medina Morocco	There were 4 sections in the CVM survey questionnaire Section 1: Information on the reasons for visiting. Section 2: Fes condition and its threats. Section 3: Conditions of the WTP choice given Section 4 :The socio-economic background info
Tran & Navrud (2006)	CVM and CE	The My Son World Heritage Site in Vietnam	CVM and CE produced very similar results. Mean WTP is US\$7 per adult foreign visitors in the entrance fees and US\$2 per household for local residents as a once-off tax.




UNESCO World Heritage Site-Melaka City

Figure 1: UNESCO World Heritage Site- Melaka City



(Source: Majlis Bandaraya Melaka Bersejarah (MBMB), November, 2011)

Legend:

-  River
-  Buffer Zone (242.8 hectares)
-  Property Zone (45.3 hectares)

DESIGNING QUESTIONNAIRE

- Designing questionnaire:

(1) Meeting with experts (MBMB officials, architect) on the starting bidding value and the current conservation practices in Melaka City.

The feedback: The bidding value starting at RM2 at the moment. Maximum bid value should not be more than RM10 per night.

(2) Face-to-face interview with 20 academicians in a private university in Malaysia – on the clarity of the questions and realistic of the starting bid value.

The feedback: The clarity of the questions, length of time and the flow of the questions asked.

QUESTIONNAIRE DESIGN

Section	Details
Section 1 – Introduction	<ul style="list-style-type: none">✓ Brief history of Melaka and importance of Melaka City✓ Purpose of this study.✓ Knowledge and values of living heritage in Melaka City
Section 2- Assessment of WTP	<ul style="list-style-type: none">✓ Valuation scenario✓ WTP value
Section 3 Attitudinal information	<ul style="list-style-type: none">✓ Attitudinal and behavioural questions✓ Views on Melaka living heritage conservation✓ Payment vehicle✓ Respondents personal background

DATA COLLECTION AND PAYMENT VEHICLE

- The preliminary field and testing was conducted via face-to-face interview in Melaka City; randomly picking 50 visitors with different starting bid of RM3/RM4/RM5/RM6/RM7. The data collection continues to a total of 502 respondents.
- In this study, the chosen payment vehicle for heritage charge via accommodations in the historical city.
- Stratified random sampling on Melaka accommodations (,e.g., hotels, inns, budget hotels, home stays etc) and random extensive interview of respondents.

Single-bounded CVM-DC methodology

- With the assumption WTP is a non-negative random variable, mean WTP can be written as: $E(WTP) = \int_0^{\infty} F_{\eta}(\Delta U) dB$

- Mean WTP = $\frac{\sum_1^n WTP_i}{(n)}$

- Validity test used t -statistic for each parameter : $t = \frac{\hat{a}_i}{se(\hat{a}_i)}$

This will be compared to the critical value for a two-tailed t-test with 95% confidence . If t value exceeded this value, reject hypothesis and the variable does not influence WTP.

- The explanatory power of the final model can be measured by pseudo- R^2 statistic: $R^2 = 1 - \frac{\ln L_{\max}}{\ln L_0}; 0 \leq R^2 \leq 1$

Double-bounded CVM-DC methodology

- There would be four possible outcomes; which are "YY", "NN", "YN" and "NY". The likelihoods of these possible outcomes are: π^{yy} , π^{nn} , π^{yn} , π^{ny}
- The total sample of respondents is denoted by N , . The log-likelihood takes the form of:

$$\ln L^d(\theta) = \sum_{i=1}^N \left\{ d_i^{yy} \ln \pi^{yy}(B_i, B_i^u) + d_i^{nn} \ln \pi^{nn}(B_i, B_i^d) + d_i^{yn} \ln \pi^{yn}(B_i, B_i^u) + d_i^{ny} \ln \pi^{ny}(B_i, B_i^d) \right\}$$

Results and Discussions-Descriptive

Variable	Frequency Number	%	Mean
Age (year)			24.705
Income per annum			30863.55
Gender			
Male	221	44.1	
Female	281	55.9	
Race			
Malay	123	24.5	
Chinese	315	62.8	
Indian	46	9.1	
Others	18	3.6	
Nationality			
Malaysian	485	96.6	
Non-Malaysian	17	3.4	
Marital Status			
Single	263	52.4	
Married	236	47	
Others	3	0.6	

Respondents' responses on the living heritage charges payment vehicle

Response	Frequency	Percent (%)
Amount added to hotel, food and recreational activities	345	68.73
Amount added to water, electricity bill	64	12.74
Amount added to income tax	83	16.53
Others	10	2
Total	502	100

Respondents' responses on the heritage charges ability to improve the current living heritage condition

Ques	Extremely unreasonable	Unreasonable	Neutral	Reasonable	Extremely reasonable
	%	%	%	%	%
Q54	6.4	14.5	53	21.9	4.2

Responses of first bid

Response	Frequency	Percent
No	289	57.5
Yes	213	42.5
Total	502	100

Frequency of Responses to Bidding Prices

WTP					
		NO	Percentage	YES	Percentage
BID	RM3	62	12.35	74	14.7
	RM4	45	9.0	45	9.0
	RM5	57	11.3	29	5.8
	RM6	61	12.15	27	5.4
	RM7	64	12.7	38	7.6
Total		289		213	

Final Regression Model

Variables	Model	
	B	S.E
BID	-0.240516	0.070430***
INCOME_A	0.000046	0.000007***
MARTLM	0.555707	0.208802***
NTIONF	1.023701	0.556045*
Constant	-0.816822	0.391545**
-2 Log likelihood = 578.662020		Cox& Snell R Square= 0.189880
Nagelkerke R Square = 0.255153		Mean WTP = RM3.70
***Significant at 1%, ** 5% and * 10% level		

The mean WTP value is RM3.70

The value of standard deviation is RM4.84.

Double-bounded CVM

First Bid			Second Bid		
	Yes	No		Yes	No
RM3	74(54.41%)	62(45.59%)	RM2	33(53.23%)	29(46.77%)
			RM4	51(68.92%)	23(31.08%)
RM4	45 (50%)	45(50%)	RM3	4(9%)	40(91%)
			RM5	36(80%)	9(20%)
RM5	29(33.72)	57(66.28)	RM4	8(14.04%)	49(85.96%)
			RM6	19(65.52%)	10(34.48%)
RM6	27(30.68)	61(69.32)	RM5	19(31.15%)	42(68.85%)
			RM7	20(74.07%)	7(25.93%)
RM7	38(37.25)	64(62.75)	RM6	15(23.44%)	49(76.56%)
			RM8	34(89.47%)	4(10.53%)
Total	213	289			

Percentage of “Yes-Yes”, “Yes-No”, “No-Yes” and “No-No” for the bidding

	Frequency	Percentage
“Yes-Yes”	160	31.9
“Yes-No”	53	10.6
“No-Yes”	80	15.9
“No-No”	209	41.6
Total	502	100

Coefficients in Double-bounded CVM

Variable	Coefficient	S.E
Constant	-12.7005033	1.87033279***
Income	1.52633050	0.18706503***
Nationality_F	0.96026156	0.48875335**
Marital Status_M	0.76437777	0.18591370***
Bid	-2.26160458	0.16316339***

***Significant at 1%, ** 5% and * 10% level

The mean double-bounded CVM is RM5.60

LIMITATIONS OF THE STUDY

- The sample of respondents for this study consists of hotel guests in Melaka City only. The reason for this sample selection is because of the difficulty of payment vehicle selection due to the situation of Melaka itself.

FUTURE RESEARCH

- Valuation studies are relatively new in Malaysia in terms of living heritage. Future studies would be able to increase the people awareness and more reliable results may be obtained.
- Day-trip visitors and local communities are not considered in this study although they do play vital role in the living heritage conservation and obtain benefits from them.
- There is also a need to look into the non-use values such as people in other states using appropriate methods to capture the non-use values.
- For future studies, it is recommended that the results of valuation can be transferred to other sites. Alternative methods such as contingent ranking, contingent rating and pair comparison are suggested

THANK YOU