
:

Logit

/

()

Logit , :

Archive of SID

/ / : / / :

E-mail: hamidmirnejad@Yahoo.com

...

()

(TC)
()

(CV)

/
()

CV

()

()

()

- Existence value

(GDP)

()

()

- Recreational value
- Travel cost method (TC)
- Contingent valuation method (CV)

- Direct values
- Indirect values
- Option value

CV
 ()
 CV
 /
 ()
 ()
 TC
 ()
 ()
 CV TC
 ()
 TC
 ()
 TC
 ()
 ()
 TC
 CV
 CV

Archive of SID

DDC

WTP

Ciriacy-

Davis

.()

Wantrup

CV .()

(WTP)

CV

.()

.()

()

WTP

CV

(DDC)

Heberlein Bishop

(DC)

()

()

"

Carson .()

" " "

DC

Hanemann

DDC

" " " "

WTP

.()

WTP

- Non-use values

- Nonmarket use values

- Willingness to pay (WTP)

- Double- bounded dichotomous choice (DDC)

- Dichotomous choice (DC)

WTP

CV

(ΔU)

:
()

ΔU = U(1, Y - A; S) - U(0, Y; S) + (ε₁ - ε₀) ()
CV

Probit Logit

)

Logit (

(A)

(P1)

Cochran

)

Logit

()

:()

(

P_i = F_η(ΔU) = $\frac{1}{1 + \exp(-\Delta U)}$ = $\frac{1}{1 + \exp\{-(\alpha - \beta A + \gamma Y + \theta S)\}}$ WTP

()

F_η(ΔU)

Logestic

WTP

θ γ, β

()

θ > 0 γ > 0 β ≤ 0

:

WTP

:()

WTP

WTP

U(1, Y - A; S) + ε₁ ≥ U(0, Y; S) + ε₀ ()

WTP

U

WTP

S

A Y

+∞ -∞

WTP

ε₁ ε₀

WTP

- Overall mean WTP

- Truncated mean WTP

- Face-to-Face

...

(A)

WTP ()

Logit

Logit

WTP ()

: (A)

$$E(WTP) = \int_0^{Max.A} F_{\eta}(\Delta U) dA \quad ()$$

$$= \int_0^{Max.A} \left(\frac{1}{1 + \exp\{-(\alpha^* + \beta A)\}} \right) dA$$

α^* WTP $E(WTP)$

(α)

$$[\alpha^* = (\alpha + \gamma Y + \theta S)]$$

Logit

Logit

WTP

Logit

Eviews Maple SPSS

Archive of SID

- Aggregation
- Maximum Likelihood

(n =)

		/	/	()
		/	/	
		/	/	()
				()

()

	/		/	/	/	/	/	

	/	/	/	/	/	/	

WTP

(/)

(/)

(/)

/)

(/)

(

WTP

(/)

()

(/)

WTP

(/)

()

(/)

WTP (/)
()

WTP /

WTP

Logit

()

Logit

Logit

$$WTP = \int_0^{10000} \frac{1}{1 + \exp\{-(-0.9201 - (0.0005A))\}} = 2477.4$$

()

Logit

WTP ()
/

WTP

	t		
/	/	/	
/	/	/	
/	/	/	
/	/	/	

Log Likelihood = -329
Percent of right prediction = 73.5%
 $R^2 = 0.39$ McFadden

WTP

()

WTP

()

()

WTP

()

()

WTP

WTP

()

$$\begin{aligned} &= (\text{WTP} \times \dots) \div \\ &= (\dots / \times \dots) \div = \end{aligned}$$

WTP

$$\begin{aligned} &= \text{WTP} \times \dots \times (\dots) \\ &= \dots / \times \dots / \times = \end{aligned}$$

() ()	()	()	()	

...

/

()

/

CV

WTP

WTP

()

WTP

WTP

WTP

/

)

(

Archive of SID

-
- 7- Asheim, G. B. 2000. Green national accounting: Why and How? *Environment and Development, Economics*, 5: 25-48.
 - 8- Cochran, W. G., 1977. *Sampling techniques*, 3rd edition, Wiley & Sons, Inc, USA, 428 pp.
 - 9- Costanza, R., R. d'Arge, R. de Groot, M. Grass, B. Hannon, K. Limburg, S. Naeem, R. V. O'Neill, J. Paruelo, R.G. Rakin, P. Sutton, & M. Van den Belt, 1997. The value of the world's ecosystem services and natural capital, *Nature*, 387: 253-260.
 - 10- Forster, B. A. 1989. Valuing outdoor recreational activity: a methodological survey, *Journal of Leisure Research*, 21(2): 181-201.
 - 11- Garrod, G & K. Willis, 1997. The recreational value of tropical forests in Malaysia, *Journal of World Forest Resource management*, 8: 183-201.
 - 12- Guo, Z., X. Xiao, Y. Gan, & Y. Zheng, 2001. Ecosystem functions, services and their values-cases study in Xingshan county of China, *Ecological Economics*, 38: 141-154.
 - 13- Hadker, N., S. Sharma, A. David, & T. R. Muraleedharan, 1997. Willingness-to-pay for Borivil National park: evidence from a contingent valuation, *Ecological Economics*, 21: 105-122.
 - 14- Hanemann, W. M. 1984. Welfare evaluations in contingent valuation experiments with discrete responses, *American Journal of Agricultural Economics*, 71(3): 332-341.
 - 15- Hanemann, W. M. 1994. Valuing the environment through contingent valuation, *Journal of Economic Perspectives*, 8(4): 19-43.
 - 16- Hanemann, W. M., J. Loomis, & B. Kanninen, 1991. Statistical efficiency of double-bounded dichotomous choice contingent valuation, *American Journal of Agricultural Economics*, 73(4): 1255-1263.
 - 17- Howarth, B. R. & S. Farber, 2002. Accounting for the value of ecosystem services, *Ecological Economics*, 41: 421-429.
 - 18- Krieger, D. J. 2001. *Economic value of forest ecosystem services: A review*, the wilderness society, Washington, D. C., U.S.A.
 - 19- Kristrom, B. 1999. *Valuing forests*, Stockholm: MBG press, St Louis, Sweden.
 - 20- Lee, C. 1997. Valuation of nature-based tourism resources using dichotomous choice contingent valuation method, *Tourism Management*, 18(8): 587-591.
 - 21- Lee, C. & Han, S. 2002. Estimating the use and preservation values of national parks tourism resources using a contingent valuation method, *Tourism Management*, 23: 531-540.
 - 22- Lehtonen, E., J. Kuuluvainen, E. Pouta, M. Rekola, & C. Li, 2003. Non-market benefits of forest conservation in southern Finland. *Environmental science & policy*, 6: 195-204.
 - 23- Loomis, J. B. & A. Gonzalez-Cabon, 1998. A willingness to pay function for protecting acres of spotted Owl habitat from fire, *Ecological Economics*, 25: 315-322.
 - 24- Maille, P. & R. Mendelsohn, 1991. *Valuing ecotourism in Madagascar*, New Haven: Yale school of forestry, Mimeo.
 - 25- Torras, M. 2000. The total economic value of Amazonian deforestation, 1978-1993, *Ecological Economics*, 33: 283-297.
 - 26- Vaze, P. 1998. *System of environment and economic accounting (SEEA)*, Chapter 13, London: ONS, U.K.
 - 27- Venkatachalam, L. 2003. The contingent valuation method: a review, *Environmental Impact Assessment Review*, 24: 89-124.

An Estimating on of the Recreational Value of Forest Parks of Iran, Using a Contingent Valuation Method, Case Study: Sisangan Forest Park, Nowshahr

H. Amirnejad¹

S. Khalilian²

Abstract

This research will discuss an assessment of the recreational value of Sisangan Forest Park, and estimate a visitor's willingness to pay (WTP) for recreational benefits obtained, based on contingent valuation (CV) and dichotomous choice (DC). For determination of visitor's willingness to pay Logit model was employed, the estimation parameters being based on methods of maximum likelihood (ML). Results indicate that 78.8% of visitors are willing to pay for recreational values at the Sisangan Forest Park. The mean value for willingness to pay for the recreational annual value of the park is Rls 2477 per visit. The total recreational annual value was estimated at 2535835 Rls/ha (291 US\$/ha) for the Park. Also, results revealed that forest parks benefited from a considerable recreational value. This provides enough justification for policy makers to maintain the quality of forest parks, and along with that to avoid the degradation of forest resources.

Keywords: Sisangan Forest Park, Recreational value, Contingent valuation, Willingness to pay, Logit model

1- Ph.D Scholar Agricultural Economics, Tarbiat Modarres University. E-mail: hamidamirnejad@Yahoo.com

2- Assistant Professor, Agricultural Economics Department, Tarbiat Modarres University