
Logit

Archive of SID

Logit

...

(Amirnejad, 2005)

(WTP)

(Lee & Han,

Wantrup (1947) .2002)

Davis (1963)

(Venkatachalam,

CVM

.2003)

Tyrvaenen & :

Vaananen (1998)

/

/

/

/

()
()

Strange et al (1999)

/

.(Torras, 2000)

/

Scarpa et al (2000) .

³ Willing To Pay (WTP)

¹ Contingent Value Method (CVM)

² Travel Cost Method (TCM)

Memariyani (1999) :

Guo et al (2001) .
Xingshan

Mirzaei (2000) .

Shrestha et al (2007) .

Amirnejad (2005)

Apalachicola River

WTP

Baral et al (2008) .

Pajooyan .

& Falihi (2008)

Annapurna

...

Carson &

Steinberg (1990)

« » « »

(Venkatachalam,

.2003)

(Barzekar, 2002)

()
() ()

Archive of SID

WTP

(Mitchell &

.Carson, 1989)

² Double-bounded Dichotomous Choice

³ Pre-test

¹. Populus caspica

$$dU = dU(INC, BID, S) \quad (1)$$

dU

« »

S BID INC

Tobit Probit Logit »

Logit

²(B)

Logit

i

$$P_i = F_\eta(dU) = \frac{1}{1 + \exp(-dU)} \quad (\text{Park \& loomis, 1996})$$

$$= \frac{1}{1 + \exp\{-(\alpha + \beta B + \gamma INC + \theta S)\}}$$

$$U(1, INC - BID; S) + \varepsilon_1 \geq U(0, INC; S) + \varepsilon_0$$

$$1 - P_i = \frac{1}{1 + \exp(dU)} = \frac{1}{1 + \exp\{\alpha + \beta B + \gamma INC + \theta S\}}$$

ε_0 .

ε_1

U(0) .

U(1)

:(Park & loomis, 1996)

(dU)

¹ Linear probability model

² BID

...

($F_{\eta}(dU)$

$$E(WTP) = \int_0^{MaxB} F_{\eta}(dU) dB$$

$$= \int_0^{MaxB} \left(\frac{1}{1 + \exp^{-(\alpha^* + \beta B)}} \right) dB$$

$\gamma, \beta.$

θ

$() \quad \theta > 0 \quad \gamma > 0 \quad \beta \leq 0$

$()$

:

α^* WTP E(WTP)

(Lee & (α)

.Han, 2002)

$$L_i = \text{Ln} \left(\frac{P_i}{1 - P_i} \right) = dU = \alpha + \beta B + \gamma INC + \theta S$$

Ln L ()

:

Logit

Mitchell & Carson (1989).

:

WTP WTP

:

(B)

² Bias

¹ Maximum Likelihood Estimator (MLE)

() () () ()

WTP

(Mitchell &

.Carson, 1989)

Cochran

⁶Shazam

()

()

()

¹ Convergent validity

² Theory validity

³ Test-retest

⁴ Simple Random Sampling

⁶ Version 10.0, created by David Bates

...

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

/ / / /

/ / / / / /

/ /

/ /

/

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

()	WTP	WTP	WTP	WTP
				WTP
				WTP
		WTP		
			() WTP	
/	/	/	/	/

نتایج برآورد ضرایب متغیرهای توضیحی مدل، سطوح
 معنی‌داری آماری آنها و تأثیرگذاری این متغیرها بر متغیر
 وابسته با () (/) (/)

$$\frac{dL_i}{dX_i} = \frac{L_i}{X_i} \left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$= \frac{L_i}{X_i} \left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{dX_i} = \alpha_i \cdot p_i (1 - p_i) \right)$$

α

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right) \times \left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right) \left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

/

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right) \left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right) \left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right) /$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right) \times \left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right) /$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

$$\left(\frac{dL_i}{L_i} - \frac{dX_i}{X_i} \right)$$

...

WTP
 WTP
 :

$$E(WTP) = \int_0^{10000} \left(\frac{1}{1 + \exp\{-1.1 - 0.17 \times 3.79 + 0.034 \times 12 + 0.000000084 \times 6434419 - 0.00038A\}} \right) dB$$

$$= \int_0^{10000} \left(\frac{1}{1 + \exp\{-1.41 + 0.00038A\}} \right) dB = 4054.67 \quad (9)$$

$$= \quad / \quad \times \quad / \quad \times \quad = \quad ()$$

()
 /
 × WTP) =
 تعداد کل بازدیدکنندگان ÷ مساحت پارک
 = (/ ×) ÷ =

Strange et al (1999)

Mirzaei (2000)

Guo et al (2001)

...

Tyrvaainen & Vaananen (1998)

Baral et al (2008)

Shrestha et al (2007)

Amirnejad (2005)

-

:

=

×

× WTP

Archive of SID

References

- Amirnejad, H. 2005. The Total Economic Value Determination of North Forests Ecosystem of Iran with the Emphasis on Valuation of Environmental-Ecological and Preservation Values. M.sc. thesis in Agricultural Economics, Tarbiat Modares University. 237 pages.
- Baral, N., Stern, M.J. & Bhattarai, R. 2008. Contingent Valuation of Ecotourism in Annapurna Conservation Area, Nepal: Implications for Sustainable Park Finance and Local Development. *Ecological Economics*, 66: 218-227.
- Barzekar, Gh. 2002. Review Plan of Nour Forest Park. Forest, Range and Watershed Management Organization Press.
- Guo, Z., Xiao, X., Gan, Y. & Zheng, Y. 2001. Ecosystem Functions, Services and Their Values- A Case Study in Xingshan County of China. *Ecological Economics*, 38: 141-154.
- Lee, C.K. & Han, S.Y. 2002. Estimating the Use and Preservation Values of National Parks Tourism Resources Using A Contingent Valuation Method, *Tourism Management*, 23: 531-540.
- Memariyani, F. 1999. Survey of Plant Cover of Golestan National Park after Jungle Burning in 1995 and its Ecological Valuation. M.sc. Thesis in Plant Science, Tarbiat Modares University. 176 pages.
- Mirzaei, M. 2000. Survey of Plant Cover and Ecological Valuation of Semi-Deserted Region in Southwestern Qom Province (Palangdarre Region). M.sc. thesis in Plant Science, Tarbiat Modares University. 192 pages.
- Mitchell, R.C. & Carson, R.T. 1989. Using Surveys to Value Public Goods: The Contingent Valuation Method. John Hopkins Press, Baltimore Md.
- Pajooyan, J. & Falihi, N. 2008. Economic Valuation of Recreational Services of Environmental Resource: Anzali Lagoon as A Case Study. *Economic Bulletin*, 147-171.
- Park, T. & Ioomis, J. 1996. Joint Estimation of Contingent Valuation Survey Responses. *Environmental and Resource Economics*, 7: 149-162.
- Scarpa, R., Hutchinson, W. G., Chilton, S. M. & Buongiorno, J. 2000. Importance of Forest Attributes in the Willingness To Pay for Recreation: A Contingent Valuation Study of Irish Forests: *Forest Policy and Economics*, 1: 315-329.
- Shrestha, R.K., Taylor, V.S. & Clark, J. 2007. Valuing Nature-Based Recreation in Public Natural Areas of the Apalachicola River Region, Florida. *Environmental Management*, 85: 977-985.
- Strange, N., Tarp, P., Helles, F. & Brodie, J. D. 1999. A Four-Stage Approach to Evaluate Management Alternatives in Multiple-Use Forestry. *Forest Ecology and Management*, 124: 79-91.
- Torras, M. 2000. The Total Economic Value of Amazonian Deforestation, 1978-1993. *Ecological Economics*, 33: 283-297.
- Tyrvaenen, L. & Vaananen, H. 1998. The Economic Value of Urban Forest Amenities: An Application of the Contingent Valuation Method. *Landscape and Urban Planning*, 43: 105-118.
- Venkatachalam, L. 2003. The Contingent Valuation Method: A Review. *Environmental Impact Assessment Review*, 24: 89-124.

Estimation of the Recreational Value of *Nour* Forest Park Using Individual's Willingness to Pay

N. Nakhaei^{*1}, S. A. Mortazavi², H. Amirnejad³ and M. A. Navazi⁴

¹ M.SC in Agricultural Economics, Tarbiat Modares University, I.R. Iran

² Assistant Prof., University of Tarbiat Modares, I.R. Iran

³ Assistant Prof., Agricultural and Natural Resources University of Sari, I.R. Iran

⁴ BS in Agricultural Economics, Iran

(Received: 25 November 2009, Accepted: 07 January 2012)

Abstract

The aim of this study was to estimate recreational value of *Nour* Forest Park and measure of visitor's willingness to pay for recreational benefits of the concerned park based on contingent valuation method and double-bounded dichotomous choice questionnaire. To do this, 353 questionnaires were completed in the park. To investigate the effect of explanatory variables like age and gender on individual's willingness to pay, logit model was used and its parameters were estimated based on maximum likelihood method. The results showed that 80.2 percent of visitors had willingness to pay for recreational use of *Nour* Forest Park. The mean of willingness to pay for recreational value of the concern park was dollar 0.42 per visit and the recreational annual value was estimated \$/ha 114.5. The results revealed that, forest parks had considerable recreational values that this may help the decision makers and social and economic managers, in the preservation planning and sustainable utilization of natural resources.

Keywords: recreational value, *Nour* Forest Park, willingness to pay, contingent valuation & Logit Model