

SESSION 2.2

ESTIMATION OF WILLINGNESS TO PAY

Introductory Course on Economic Analysis of Investment Projects

Economics and Research Department (ERD)

The views expressed in this presentation are the views of the author/s and do not necessarily reflect the views or policies of the Asian Development Bank, or its Board of Governors, or the governments they represent. ADB does not guarantee the accuracy of the data included in this presentation and accepts no responsibility for any consequence of their use. The countries listed in this presentation do not imply any view on ADB's part as to sovereignty or independent status or necessarily conform to ADB's terminology.

Willingness to Pay

- Basis for consumer welfare change
- Used for economic analysis benefit valuation for non-traded goods
- Consumer surplus = $WTP - \text{actual payment}$ (Welfare Triangle)

Willingness to Pay

- Important for tariff setting and used for benefit valuation in non-traded sectors
- CV surveys set bid price and establish if household will/will not use service/buy good at that price
- Probit model explains yes/no decision by set of variables relating to household characteristics, service quality and bid price

Mean Willingness to Pay

The probit model will be of the form

$$Y = \alpha + \beta_1 X + \beta_2 B + \varepsilon$$

Where y is the yes/no response, X is a vector of variables reflecting household, area or other characteristics, B is the bid price and ε is an error term.

Mean WTP is derived from the expression $(\sum(\beta_1 * X^a) / \beta_2)^{-1}$ where X^a is the mean value of X variables.

Mean Willingness to Pay

- Where as illustrated below there is constant in the probit model (α) this must be added to the sum of the products to give $(\alpha + \sum(\beta_1 * X^a)$ so that mean WTP becomes

$$(\alpha + \sum(\beta_1 * X^a) / \beta_2)^{-1}.$$

e.g., in the next slide, Mean WTP = RMB 7.18

Mean Willingness to Pay (MWTP) Calculation for Zhaoxian			
Variable	Coefficient	Mean	Coefficient*Mean
Bid	-0.19779		
Income	0.00002	24,501	0.48468
Education	-0.00826	10.60700	-0.08765
Gender	0.04213	0.49380	0.02080
Age	-0.01020	43.27100	-0.44149
Dwelling	0.11087	0.58058	0.06437
Yard	0.00146	121.68000	0.17805
Impact	-0.07108	4.38220	-0.31146
Squality	-0.12587	3.04340	-0.38307
Constant	1.89640		1.89640
Total			1.42062
Mean WTP			7.18249
Mean WTP	$(1.42062/-0.19779)^{-1} =$		7.18248515

Mean Willingness to Pay

The same approach can be applied to derive mean WTP for specific target groups by replacing the average value for each variable X (for example RMB 24.5 for income) with the specific X value for the group concerned (for example RMB 20 for the very poor).

Thank you.