

BOOK REVIEW



Ahmed, Sarwar Uddin and Gotoh, Keinosuke. *Cost-Benefit Analysis of Environmental Goods by Applying Contingent Valuation Method: Some Japanese Case Studies* (Tokyo: Springer-Verlag, 2006, pp. xvi +160, Hardcover \$95, 69,95€, £62.99) ISBN: 978-4-431-28949-4

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Have you ever wondered whether your refreshing early morning walk in the park comes to you at a greater cost than just your taxes? Did you ever think that your revitalising vacation with your family by the seaside may be leaving an unclean footprint for the future generations? Surely the governments and private organizations worldwide give second thoughts before disturbing nature to provide goods and services to its citizens and consumers. Or, do they? Development activities that affect the environment are no doubt essential for increasing land for cultivation, for housing or farming, making infrastructure facilities and so on. However, it is essential to preserve our environment for the future of mankind as well. Therefore, it is no surprise that every development project involving the direct or indirect use of “environmental goods” require evaluation of costs and benefits before such project is given the go-ahead.

Evaluating the impact of using environmental goods can be quite a difficult and controversial task; often economists have been criticised for trying to put a “price tag” on nature (Jing, 2009). Yet, institutions charged with protecting and managing natural resources must often make difficult economic choices based, either explicitly or implicitly, on society’s values: justifying and setting priorities for programmes, policies, or actions that protect or restore ecosystems and their services. There are several instruments available that help make such decisions as publicly acceptable as possible.

The book titled “Cost-Benefit Analysis of Environmental Goods by Applying Contingent Valuation Method: Some Japanese Case Studies” by Dr. Sarwar Uddin Ahmed and Prof. Keinosuke Gotoh¹¹ is a valuable book for

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researchers, scientists, consultants and professionals alike, especially in the fields of Cost-Benefit Analysis, Environmental Resource Planning, Urban Planning, Geo-Environmental Engineering. Although the book sites examples of Japanese cases, it mainly contributes to the understanding and justification of using the Contingent Valuation Method (CVM) as a means to perform cost-benefit analyses of environmental goods and services in new ways by linking CVM with other multi-disciplinary techniques, namely, remote sensing. The more specific objectives of the book, as pointed out by the authors, are: (a) to estimate the environmental value of public and private environmental amenities by applying contingent valuation method (CVM); (b) to examine the nature and type of cost-benefit analysis (CBA) methods undertaken in Japan concerning environmental amenities; (c) to suggest ways to incorporate socio-environmental factors into the cost-benefit analysis; (d) to develop models to trace out the factors influencing peoples willingness to pay for the environmental goods under study and direction of the impact; (e) to find ways for the possibility of environmental valuation by integrating contingent valuation method (CVM) with various multi-disciplinary techniques (pg. VII).

The authors divided the book into six parts. PART ONE introduces the theoretical background for the book with the help of two chapters. *Chapter 1* starts off by outlining the concepts, theories and steps of measuring environmental benefits and costs, then follows up with a summarized discussion on environmental values and commonly used monetary and non-monetary environmental valuation techniques, for example, Market Price Method, Hedonic Pricing Method, Travel Cost Method, CVM, Contingent Choice Method, Estimating Dose-Response Function, etc. *Chapter 2* focuses on discussing the central theme of the book by thoroughly elaborating the CVM, its historical background, the survey techniques that can be used and the elicitation methods. In addition, the chapter also discusses recognised constraints and criticisms of using CVM in environmental valuation.

In parts TWO through FOUR the authors chose a wetlands reclaiming project, public parks and a popular theme park in Japan as cases where the authors apply CVM and study their findings. In PART TWO the authors picked the Isahaya Bay Wetland (IBW) out of Japan's 16 wetlands where development projects were going on during the time of the study. *Chapter 3* provides an overview of the IBW and the Isahaya Bay Reclamation Project (IBRP) as well as the problems to be addressed in this important and endangered wetland. In *Chapter 4* the authors summarize their environmental valuation results derived by using CVM from the responses received from Isahaya, Nagasaki and Kitakyushu cities surrounding the bay. Finally, in *Chapter 5* of the authors recalculate the cost-benefit analysis (CBA) of the IBRP and tried to suggest ways to incorporate socio-environmental factors

into the cost-benefit analysis. In the single chaptered PART THREE, i.e. in *Chapter 6*, the authors chose the case of public parks in Nagasaki City. The authors applied the CVM on responses given by random households of the city, and results of the multivariate analysis are discussed. PART FOUR presents the third and final case study of the book wherein the environmental valuation of the Huis Ten Bosch (HTB) is analysed. In *Chapter 7* the authors provide a background of the then heavily indebted and famous private recreational resort and theme park HTB, modelled after a Dutch town, and the operators various initiatives to restore an industrial wasteland. *Chapter 8* discusses the environmental valuation results estimated by applying CVM on responses received from random households of Sasebo and Nagasaki cities. Finally, *Chapter 9* recalculates the CBA of HTB by incorporating environmental valuation considerations during the application of the CVM.

Part FIVE, containing four chapters, constitutes the unique feature of this book, where by using the databases of the three case studies, some supplementary analysis has been attempted to provide some new guidelines for conducting CBA of environmental goods. First, *Chapter 10* runs diagnostic on multivariate models used on the IBW case study and discusses the relationship between distance and willingness to pay (WTP) by a multivariate model. Then, *Chapter 11* takes the IBW case study database and presents the importance of the customary free comments section included at the end of the CVM questionnaire also by another multivariate model and graphical summary. Using the IBW and HTB database and satellite images, *Chapter 12* explores the possibility of getting a wider view of environmental valuation by integrating CVM and remote sensing on both the cases separately. Finally in *Chapter 13* the authors show the impact of commonly used elicitation methods (or, question formats), namely open-ended (OE) and dichotomous-choice (DC), on the willingness to pay using the HTB and public parks databases.

The final part, i.e. PART SIX, summarizes the findings of the case studies in *Chapter 14*, and provides policy recommendations for conducting future environmental valuation studies using CVM. In addition, the book includes two appendices which contain the questionnaire used in the IBW study and some time value of money concept formulas used in CBA of environmental goods.

The timeliness of this book is probably not a coincidence. Auditing environmental impact of projects to assess environmental risks, energy consumption, and waste or pollution emissions is an important topic in today's environmentally conscious social milieu (Watson & MacKay, 2008), especially at a time when businesses around the world have united in the largest corporate citizenship and sustainability initiative ever. Over 5,200

corporate participants and stakeholders from more than 130 countries are currently taking part in United Nation's public-private initiative called the Global Compact (UN Global Compact, 2009), where three out ten universally accepted principles are focused on areas such as research, innovation, cooperation, education, and self-regulation that can positively address the significant environmental degradation, and damage to the planet's life support systems, brought by human activity (Cetindamar, 2007; UN Global Compact, 2007).

Like other books and articles on contingent valuation of environmental goods (Bateman & Willis, 1999; Kopp *et al.*, 1997; Mitchell & Carson, 1989; Painter *et al.*, 2002) the authors of the book used case studies to demonstrate the strengths and weaknesses of the CVM in valuating the environmental goods. In support of the popularity of using CVM in the valuation of environmental goods, it can undoubtedly be said that compared to other techniques CVM is able to handle "passive use" or "non-use" values of the environmental goods being tested. Justifications for using CVM in all three case studies are adequately provided by the authors. However, the authors do not undermine the limits of using CVM:

There is no perfect environmental valuation technique. One technique might be appropriate for one situation and inappropriate in others. However, based on the existing literature CVM appears to be reasonable, though potentially biased methodology. (pg.8)

(CVM) has the shortcomings that survey studies usually have. The way the WTP questions are made may biases value estimates. Also respondent's reply to survey questions about their behavior often differs from what they actually do. Much controversy surrounds the use of CVM when most of the value of the good derives from passive use... In addition, moral and ethical positions are also found to be important in CVM studies... (pg. 17)

Ray Kopp and Kerry Smith, who were reviewing arguments by the anti-camp, said in their article that CVM results do not show the expected sensitivity to magnitude of the proposed environmental change (Kopp *et al.*, 1997). But, such scope effect, or insensitivity to scope, was not evident from the responses and findings investigated by the authors.

In essence, the success of CVM depends on the systematic and methodical approach to WTP. The authors have clearly taken enough care in devising the approach to WTP in Appendix A (pp. 145-150), where respondents were given clear arrays of particular outcomes and were asked to carefully consider how they would respond to the prices being offered. Like many other studies

using the CVM (Nocera *et al.*, 2002; Painter *et al.* 2002), the authors have used more than one elicitation techniques during the valuation exercises, pre-testing them on each occasion using up to three trials.

For example, in the IBRP valuation calculations, the authors pre-tested mean and median WTP calculations in three trials with two types of elicitation method: the Bidding Game (BG) and the DC method (pp. 32-36). Although the BG method provided lower WTP value, the authors decided upon the DC method for the IBRP questionnaire not because it generated higher WTP values but also because of its "*proven efficiency as a balanced elicitation method*" (pg. 36). During calculation of the WTP for the IBRP the authors used both the Turnbull and Weibull methods in order to compare results. Using the Turnbull method mean WTPs were ¥6,440, ¥6,560 and ¥6,567 in Isahaya, Nagasaki and Kitakyushu cities, whereas using Weibull method mean WTPs were ¥6,388, ¥6,524 and ¥6,172 respectively.

Unlike various other studies that use one or more than one similar substitutable valuation technique to strengthen their research findings (McLean & Mundy, 1998; Handy & Gleason, 2007; Nocera *et al.*, 2002; Khan, 2006), the authors of this book have tried to suggest ways to incorporate socio-environmental factors into the CBA, in addition to using other multi-disciplinary techniques, such as remote sensing technique, making it quite an unique endeavour indeed. For example, in the IBRP case, the authors recalculated the 1986 Ministry of Agriculture, Forestry and Fisheries (MAFF) CBA calculations to incorporate socio-environmental factors and found that the benefit-cost ratio changed from 1.026 to 0.827, which showed that in 1986 the project would have been deemed unviable by MAFF if they had incorporated the socio-environmental factors (pp. 51-57). Furthermore, when the authors used remote sensing technique to calculate monetary impact estimation (by land cover mapping) of the IBRP they found that present value of wetland loss jumped from approximately ¥22-32 billion (using CVM) to ¥75-200 billion using land cover mapping (pp. 121-125). These visible differences to CBA alone is reason enough to make this book an invaluable buy for both researchers and professionals alike. However, care must be taken to generalize the findings of this study. In this regard, The reviewer agrees with the authors when they say:

...the studies discussed in this book are merely some representative environmental cases in Japan...The result of the studies and subsequent discussion are expected to provide readers an insight into the approach and mindset regarding environmental cost-benefit analysis in Japan. However, replicating and synthesizing of the results revealed by the studies discussed in this book needs more comprehensive studies. (pg. 143)

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