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BOOK REVIEW: Robert A. Young. *Determining the Economic Value of Water: Concepts and Methods.* Washington, DC: Resources for the Future, 2005, xv + 357pp., $80 cloth, ISBN 1-891853-97-X; $39 paper, ISBN 1-891853-98-8.

Mikhail Gorbachev once said, "Water, like religion and ideology, has the power to move millions of people. Since the very birth of human civilization, people have moved to settle close to it. People move when there is too little of it. People move when there is too much of it. People journey down it. People write, sing and dance about it. People fight over it. And all people, everywhere and every day, need it" (Swanson, 2001).

Water is essential to life. It is also an indispensable input into agriculture, industry, and households, and provides public good benefits such as waste assimilation, recreation, wildlife enhancement, and scenic values. Water prices across these varied uses, however, rarely provide an accurate reflection of value, offering little guidance for efficient investment and allocation decisions. To aid public decision making relating to water, economists have developed a wide range of methods for valuing benefits of water resources in alternative uses. In *Determining the Economic Value of Water: Concepts and Methods*, Robert A. Young suggests that while market prices will play an increasing role in water allocation, applied economic valuation will continue to play an important role in cost-benefit analysis guiding water-related public policy decisions.

In this book, Young provides a comprehensive overview of evaluation techniques and makes recommendations for valuing water in various uses and situations. Young presents the conceptual framework for valuation of both commodity and public good uses of water with an emphasis on commodity uses of water by agriculture, industries, and households. He describes various measurement methods in detail, discusses their strengths and limitations, and provides numerous examples of their application in previous research. This thorough and well-referenced book is likely to become an important resource for every economist working in the area of water resource valuation and policy analysis. With both technical details and clear exposition, it would also be an excellent guide for graduate and advanced undergraduate courses.

Young has more than three decades of experience developing and applying models for estimating the economic welfare effects of changes in water quality and supply throughout the world. Young's experience as a water policy consultant for the World Bank, the U.S. Agency for International Development, the Asian Development Bank, and the United Nations provides a rich background of practical

application, particularly in commodity uses of water in agriculture and industry, complementing the technical aspects of this book.

Determining the Economic Value of Water is divided into two parts. The first develops the conceptual framework and the economic theory of valuation of water both as a commodity and as an environmental good. The second part discusses applications of valuation of water in irrigated crop production, industrial uses, municipal uses, and selected water-related public goods. In contrast to environmental valuation literature, the emphasis is on commodity valuation, particularly in irrigated agriculture. While Young's coverage of water valuation is quite thorough, he also provides useful references for further details about nearly every topic covered in the book.

Young begins with a discussion of the special attributes of water that have spurred government involvement in allocation and quality management. These include spatial and temporal uncertainty of flows, high exclusion costs, economies of scale in water supply development, and externalities related to both quantity and quality impacts of one's use on others. He then proceeds to present methods of valuation that can be used in cost-benefit analysis to improve the efficiency of government decision making about water development, allocation, and quality management.

Agricultural economists focusing on private good use of water will be particularly pleased with the detailed presentation of the theory and methods of valuation of producers' use of water. There is extensive comparative analysis of methods, and analysis of strengths, shortcomings, and drawbacks of each method. Under his discussion of deductive techniques, Young presents two basic residual methods of valuation—the product exhaustion theorem and the theory of economic rents. The alternative cost method and other less-used deductive techniques such as benefit transfer are also reviewed. Finally, inductive techniques such as estimation of production and derived demand functions are discussed. Young provides useful explication of "at source" versus "at site" values, including which methods produce what values and how to compare them. Young also usefully highlights the difference between intermediate uses such as in agriculture or industry, and final uses such as household-level consumption, and how to compare such values to make efficient allocation decisions.

The sections addressing public goods benefits of water supply and quality are less technical and less thorough, but these areas have received considerable attention in the literature over the years. Young presents the contingent valuation method, hedonic valuation, and the travel cost method, providing an overview of the methods and discussion of difficulties in practical application of each. Perhaps due to his private good bias, Young overplays the potential biases and difficulties of these public good benefit valuation techniques, particularly in light of his generally positive discussion relating to actual applications in the second half of the book. He is more positive about the potential of choice modeling, a method gaining favor in recent years, expanding on conjoint analysis methodology.

In the preface, Young states that a major aim of the book is to "provide professional economists (both field practitioners and advanced students) with a consistent

conceptual foundation for comparing the economic values of water across alternative uses and with costs of investments." In addition to accomplishing this goal, he also provides a guide to the diverse literature on valuation of water in offstream commodity uses and integrates this literature with the more developed literature on valuation of environmental goods and services. Young recognizes the potential increasing role of markets in water allocation, but also acknowledges the inevitable continued government involvement and the importance of "good" economic valuation in policy analysis to improve the efficiency of government actions. With a strong focus on commodity uses of water in agriculture (the largest consumptive use of water) and industry, this book fills a significant gap in the literature of nonmarket valuation of water resources.

References

Swanson, P. (2001). *Water: The Drop of Life.* Chanhassen, MN: NorthWord Press.

Molly Espey
Clemson University