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Finally, in chapter 6, Sutter and Simmons' study of tornadoes provides a nice demonstration of the value of careful applied economic analysis on disasters. One finding is that tornadoes are more lethal after dark. The reasons why this is the case will determine the appropriate policy response. Useful.

Collectively, the chapters highlight that economic analysis of disasters has important implications for government policy and that there are still important questions to be resolved. The concepts for analysing uncertain natural system, such as moral hazard, with which agricultural and resource economists are familiar, provide the foundation for an analysis. However, this book introduces other factors that need to be considered, such as how real people and markets respond to the risk of disasters and associated policies, the links between disasters and urban land markets, and the regional economic context. Messier issues such as the complex institutional issues raised by urban planning and zoning systems, and the confounding uncertainty of climate change are not fully addressed, but the approaches described in this book provide a good starting point.

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The End of Abundance: Economic Solutions to Water Scarcity, by David Zetland. Published by Aguanomics Press, California, USA, 2011, pp. xiv + 294, ISBN 9780615469737 (pbk), \$20.

Zetland's *The End of Abundance* sets a precedent for making water economics entertaining. This engaging book covers a wide range of water management issues in the developed and developing world. The author uses straightforward language to make the economics behind water scarcity accessible to the general public. The book is divided broadly into two parts. The first part helps readers understand the individual decisions on water use and supply leading to problems of scarcity, the role of inappropriate pricing in generating this problem, and also how correct pricing can solve it. The second part considers the bigger picture of public choice, where decisions on water provision and allocation made on behalf of the public are subject to principal-agent relationships. The author suggests pragmatic solutions through the lenses of economic theory, using simple terms to convince the public of why it is 'the end of abundance' and the necessity of demand-side solutions to improve water efficiency in the new era. Having highlighted the political dimensions of water provision, Zetland makes a compelling case for greater reliance on markets to ensure the most efficient distribution of water to those who value it the most.

The End of Abundance can be likened to a collation of global examples of water woes arising from the transition from the 'expansionary phase' (low social cost for expanded water use with few competing demands) into the 'mature phase' (high social costs with growing competing demands), using Randall's (1981) terminology. Zetland highlights the inefficiency of ad hoc policies used to address shortages arising from policies inherited from the expansionary phase (subsidised water to meet all demand). It is unfortunate that ad-lib restrictions on watering days and unnecessary desalination projects are not exclusive only to Australia.

The book is well structured, with ideas in each of its 12 chapters tying neatly into each other. The prologue primes non-economists for the rest of the book, providing an intuitive explanation of economic concepts and stressing that the problem of scarcity can be sooner attributed to an inadequate institutional set-up, rather than purely to natural phenomena. The author then highlights the importance of correct pricing by explaining in simple terms why current average cost pricing is particularly inefficient and creates shortages. He expands on this in chapter one by discussing water delivery to urban centres and sets the stage for following chapters by highlighting the limitations of moral suasion and current cost-based pricing structure (translated into increasing block rates) for water conservation. In chapter four, Zetland opens a discussion countering activists who smear bottled water. He makes the point that this is a matter of markets responding to consumer demands driven by the profit motive, which is a common theme in the book. The profit motive of firms in a competitive environment will deliver the greatest social well-being, including for the under-privileged parts of society. He notes that good regulatory oversight and governance has greater bearing on service quality than whether utilities are publicly or privately owned.

The narrative of the anecdotes makes for fascinating reading and is appealing to any reader. The book has many strengths, particularly the ease and clarity in which economic concepts and theories are explained, for example convincing a general reader of why water and crop price subsidies are 'bad' and why the US Food Aid program hamstrings the recipient country's ability to feed itself. Zetland presents many examples of poor policy decisions which induce water shortages that are followed up with even more inefficient policy fixes (for example, trade blocks in water between irrigators in the Imperial Valley and Las Vegas forced the township of Las Vegas to invest in costly desalination plants). The appeal of the book is its ambition to suggest practical approaches to address water scarcity, with the aim of removing political interference by improving market functionality and increasing competition for services. As many previous authors, Zetland advocates scarcity pricing under the guise of 'some for free', which provides free quotas per head to contend with equity issues around scarcity pricing. Other solutions are merited although, as the author disclaims, can be idealistic. The 'all in auction' where irrigators bid for allocations every year is plausible if irrigators had no prior entitlement holdings, but otherwise it requires forced sales

of existing water rights; citizen water rights that are tradeable could only be contemplated under strong institutional settings; mandating insurance for public dams and using prediction markets of insurance premiums to provide monetary incentive for public oversight may in reality suffer from thin markets and asymmetric information.

One of the stronger arguments Zetland puts forward is that privatisation of water utilities can benefit the poor in developing countries. He argues that this will circumvent bureaucratic meddling, which, for example, provides subsidised sewage services in the name of the under-privileged who do not actually receive the benefits. Privatisation is indeed a necessary option to consider for institutions with limited public funds. The OECD has published reports of private sector involvement in water and sanitation services for Egypt, Lebanon and Mexico. In these reports, the ability to attract foreign investment has been identified as a significant challenge, as it is sensitive to commercial risk given unfamiliar environments. The privatisation discourse could have been enhanced if the author gave further discussion of how conflicts of interest can be avoided under weaker institutional settings without the profit-imperative overriding social obligations.

Zetland at times leaves readers wanting for more detail, perhaps to keep from delving into tangential topics. He criticises the US embargo of Brazilian sugar cane for biofuel as being protectionist and inefficient; however, it is surprising that overseas deforestation impacts from California's biofuel program did not receive a mention. The author also blames subsidised electricity in India for farmer suicides, which has previously been attributed to biotechnology. He argues that reduced pumping costs leads to excessive groundwater table drawdown. Therefore, farmers who cannot afford larger pumps to access deeper wells cannot irrigate their crop (p. 120). While this might be a contributing factor, there are probably greater reasons disadvantaging farmers such as a lack of credit.

These are relatively minor points considering the many strengths of the book. This book is very accessible and informative. While its main focus is water, it makes for enlightening reading as an introduction to resource economics and public choice. The book's two-part structure can be ignored as the ideas introduced in early chapters resonate throughout, although at times in a slightly repetitive way. Overall, *The End of Abundance* is an entertaining book that makes economics accessible and fun to the public.

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Reference

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