

7-21-2004

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This is the abstract of a presentation given on Wednesday, 21 July 2004, in session 27 of the UCOWR conference.

Recommended Citation

Mathis, "What is Markets Won't Work? An alternative Market-Based Instrument for Water Allocation in the Presence of Irrigation Subsidies and Social Value for Instream Flows" (2004). 2004. Paper 38.

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What if Markets Won't Work? An Alternative Market-Based Instrument for Water Allocation in the Presence of Irrigation Subsidies and Social Value for Instream Flows

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Increasing water scarcity, driven by growing population and water demand, has widely demonstrated the need to achieve more efficient allocation of water. For a variety of reasons including heavy subsidization, the price of water faced by users is typically well below its economic value, leading to well-known inefficiencies. Legal, political and social constraints make the removal of such subsidies difficult. Within this context, markets for tradable water rights have become a favored approach to overcoming price distortions such as irrigation subsidies and to achieving efficient allocation of water. Yet water markets also experience important challenges and limitations. After discussing many of the practical and theoretical challenges to implementing water markets, this paper considers the allocation of water in the face of two common distortions: (1) when in-stream flows are imbued with social value from ecological, recreational, and aesthetic uses, and (2) the presence of irrigation subsidies. While, in theory, markets can correct the distortion caused by water subsidies, the public good value for instream flows leads the market to fail. Thus, even if water markets can be established, they do not achieve efficient allocation when instream uses are considered. The rest of the paper explores the question: if markets cannot achieve allocative efficiency, are alternative economic instruments available that might accomplish this objective? A simple general equilibrium model is developed to explore the use of a two-part tax instrument to achieve the optimal allocation of water when instream water has social value and irrigation is subsidized. This two-part instrument combines taxes on the economy's inputs (other than water) and outputs to correct both the distortion caused by an irrigation subsidy and the public good externality associated with instream flows. This instrument has the desirable qualities that (1) it does not rely on the existence of well-defined and transferable water rights or perfectly functioning water markets, and (2) it overcomes the political and social constraints on manipulating the price of water directly.