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FREE MARKETS – A STIMULUS OR IMPEDIMENT FOR INTEGRATED WATER RESOURCES MANAGEMENT?

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A significant philosophical water management controversy exists over the balance between economics, social equity and environmental protection in integrated water resources management. For many, the economic outcomes predominate, even to the marginalization of the others. This conviction became significant in the United States in 1980 when the United States Supreme Court ruled that groundwater, under certain circumstances, could be considered a commodity of interstate commerce. The ruling differentiated between water as a human need and as an economic good. (Sporhase, 1982)

Although water is indeed essential for human survival, studies indicate that over 80% of our water supplies is used for agricultural purposes. The agricultural markets supplied by irrigated farms are worldwide. They provide the archetypical example of commerce among the several States for which the Framers of our Constitution intended to authorize federal regulation.

The statement presented the duality of water. Water is essential for human preservation, both for ingestion and other domestic needs, and for assimilating waste. However, water is also essential to economic prosperity and, in that sense, is an economic commodity. This duality mushroomed into a global debate in 1992 when the International Conference on Water and the Environment, held in Dublin, Ireland, announced as one of four Guiding Principles for the management of water; (Dublin, 1992)

Fresh water is a finite and vulnerable resource; essential to sustain life, development and the environment ... Water has an economic value in all its competing uses and should be recognized as an economic good.

The debate continues, centering on the basic question. *Is the free-market approach to recognizing water as an economic good compatible with the long-term goals of IWRM?* The basis of IWRM stands on a foundation of four legs: economic efficiency and growth, social equity, environmental protection, and effective governance. The answer to the question, essential when devising successful strategies for integrated water resources management, rests on whether the free-market approach is compatible with the other three essential supports for IWRM.

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Water scarcity and its attendant effect on quality of life to the human species is increasing across the globe. As a means to deal with the problem, the World Bank has proposed that nations and states treat water resources as tradable property rights as a means to “increase the productivity of water use, improve operations and maintenance, stimulate private investment and economic growth, reduce water conflicts, rationalize ongoing and future irrigation development, and free up government resources for activities that have a public good content or positive externalities.” (Thobani, 1997) This proposal needs much analysis and debate since the consequences to effective water management are significant.

Economic theory says that markets increase economic efficiency by allocating resources to their most valuable uses. (Mohanty and Gupta, 2002) Water markets, therefore, offer theoretical advantages in being able to transfer water to higher and better uses, at least when these uses are valued according to their financial return. Economists claim that in optimum economic system, the incentives driving individuals and businesses should lead them in a direction that is desirable from a social perspective. Market incentives should, in other words, lead people to provide such goods and services and to provide them by such processes as are appropriate socially. (Heal, 2000)

However, even the “perfect” market has disadvantages, not the least of which is the fact that the theory is based on each transaction being based on a rational individual, with perfect knowledge, deliberately maximizing utility. (Thurow, 1983; Kuttner, 1996) Given the 1634 mania in Holland and the more recent high tech “dot.com” frenzy in the U.S., (Perlman, 2003) the rationality of rationality in economic decisions is questionable. Given the complexity of the global economy, some doubt may be raised concerning the perfect knowledge of individual decision-makers. Other disadvantages demonstrate that, while markets are appropriate for many, if not most, situations, they are not appropriate in every instance. The most serious of these disadvantages are the failure of the tradable property rights to water to consider other goals of *integrated water resources management* (IWRM).

THIRD-PARTY EFFECTS

Market failures occur for instance when there are important externalities that are unaccounted for (e.g., social or environmental impacts) or that go uncompensated or unpaid (e.g., positive or negative third-party side-effects) that. (Hermans and Hellegers, 2005) For example, rarely can a transaction be made to change the time, location or manner of use of a water right without affecting other water users, designated as third parties. If the benefit-cost of the transaction is the basis on whether the water rights transfer should take place, shouldn't the transaction costs to third parties be included?

While it is easy enough for someone to own and manage water unilaterally in relatively small amounts (e.g., bottled water), a river or an aquifer is an ambient resource that can never be fully controlled or owned. Withdrawing water on a large scale necessarily affects many others, making it difficult to procure the contractual assent of all significantly affected persons. But, by not requiring the acquiescence of all affected parties, third parties may be effectively deprived of their right to use the water. Wealth is transferred from those who formerly used water to those who thereafter would use water. Typically those who lose out are small users

without capital resources or alternative sources of supply of water. In the end, allowing such uncompensated transactions result in the transfer of wealth from the general public to the privileged few. (Dellapenna, 2000)

Yet, if the rights of third parties are protected, transaction costs on all but the smallest water bodies quickly become prohibitive. Theoretically it might be possible for a properly structured market to cope with these concerns. However, when one user attempts to convey a water right to another, particularly to one seeking to make a completely different use of the water, the problem of “externalities” arises. In any large and complex hydrologic system, the difficulty and expense of structuring the necessary transactions (transaction costs) in fact prevent markets from developing unless the law chooses to disregard the externalities. The law, however, protects against such externalities by the rule, found in nearly all legal systems, that one cannot alter the time, place, or manner in which one uses water without the consent of other affected holders of water rights. The reality of transaction costs should give even the most free-market oriented economist pause to consider whether true markets could function effectively for water resources.

INTEGRATED WATER RESOURCES MANAGEMENT AND TRADABLE PROPERTY RIGHTS TO WATER

This difficulty involving third party effects is compounded if one considers more than the effect on other holders of water rights. Changes in the location and/or the manner of water use effects all those businesses and activities that depend on the original location and manner of use. Consider agricultural use. The farmer engaged in irrigated agriculture supports a variety of businesses and industries that provide the farmer his seed, farm equipment and other daily or seasonal needs. Both a permanent and a seasonal labor market develop to support the farmer and taxes associated with the sale of crops or other commodities provide the basis for local and state services. When the farmer’s water withdrawal permit is transferred to another location or manner of use, say to municipal water supply, an entire community is affected, perhaps even destroyed.

Consider the tax base of counties that lose water. For instance, values for agricultural land with a water withdrawal permit in Georgia are almost double those for land without a permit. (Demeo, 2003) As permits are sold across county lines, the losing county can suffer substantial loss in their tax base. Loss of the tax base could have substantial effect on the losing county’s ability to provide effective programs of public health and safety as well as quality education. Moreover, small farms wishing to expand their farming operations will have to pay a high price for permits and/or water, weakening their profit margin. Municipalities will have to compete to purchase expensive water withdrawal permits or purchase expensive water. Small businesses wishing to expand will have to compete to purchase expensive water withdrawal permits or purchase expensive water. These problems are an example of the need to consider *social equity* in any transaction to trade water rights. This, in turn, leads to another issue that makes tradable property rights to water problematic is its negative impact on *integrated water resources management*

The Pacific Institute for Studies in Development, Environment, and Security reviewed water rights trading in California and concluded that the practice provided disincentives for sound water management, promoted urban sprawl, increase groundwater overdraft, and adversely impact rural economies, employment, tax revenues and public services. Other studies have noted that water rights transfers often result in the transfer of wealth from the poorest and weakest in society to those who are relatively wealthy and powerful.

In his review of the Chilean model of tradable property rights to water, Bauer has noted that the legal, regulatory, and constitutional framework has proven to be rigid and resistant to change and incapable of handling the complex problems of river basin management, water conflicts, and environmental protection. He notes that these more complex problems are the fundamental challenges of *IWRM*. His analysis also concluded “peasants and poor farmers have for the most part not received the economic benefits, which indicates that social equity is another weak point of the current framework.” (Bauer, 2004)

The Evidence for the Success of Water Markets

The western United States, Australia and Chile are often presented as examples of how reallocation of existing water rights can help meet growing demands for water in predominately arid regions. However, on close inspection, these examples are arguable.

First, it can be argued that true markets, as opposed to state administration masquerading as a market, have actually played a negligible role in water management in both the United States and overseas. The primary reason for this fact is the effect of market transactions on the right to use water held by third parties. In the United States, most water rights transactions take place under some form of governmental authority, with significant governmental oversight and procedures to protect third parties. Likewise, Australia imposes significant governmental oversight and severely limits any market-like characteristics in order to protect third parties. (Dellapenna and Draper, 2002)

In Chile the benefits of tradable property rights in water have been effective in encouraging investment in water use and infrastructure, and in reallocation of water to economically defined higher and better uses. It has, however, worked inefficiently and inequitably primarily because of state intervention has not adequately protected either third parties or environmental needs. Ineffective mechanisms for resolving conflicts and internalizing externalities reduce economic efficiency and growth, especially over the long term. The Chilean approach to managing water as an economic good puts all the emphasis on water as a private good and tradable commodity. Consequently, it is very difficult to recognize or enforce the other aspects of water as a public good, as described by *IWRM*. (Bauer, 2004)

With regard to water markets in the western U.S., Professor Dellapenna argues that markets in free-flowing water have actually appeared to be extremely rare. “The markets have been used to transfer fairly small quantities of water among similar users in close proximity to each other, such as between farmers or ranchers within a single irrigation or water management district.” (Dellapenna, 2000) An analysis of the research used to support the success of water markets (Czetwertynski, 2002; Cummings, et al, 2002) arguably supports the Dellapenna thesis. (Dellapenna and Draper, 2002)

SOCIAL EQUITY, ENVIRONMENTAL PROTECTION AND EFFECTIVE GOVERNANCE

Integrated water resources management (IWRM) is a water management process that integrates the assessment, management, protection and utilization of all water resources within a basin to meet the needs of humans on a sustainable basis, while still protecting the integrity of the resource and its associated ecosystems. The primary goal of integrated water resources management is to develop a comprehensive understanding of the available water resources and human and ecological water resource needs within a given basin, and then to manage those resources in an equitable and sustained basis. *IWRM* stands on a foundation of four legs: economic efficiency and growth, social equity, environmental and ecological protection, and effective governance. The question is whether the free-market approach to recognizing water as an economic good is compatible with the long-term goals of *IWRM*?

The current market philosophy tends to focus on water as an economic good and argues that water should be allocated to those uses that bring the highest economic return. Maximizing the economic efficiency of water allocation is usually defined as maximizing the financial return gained from the allocation. However, the value of water often extends beyond its financial benefits. *Social equity* and *environmental and ecological protection* are such values. Certain water uses exist which are associated with quality-of-life issues or which have social and/or civic purposes that cannot be appropriately quantified in a valid benefit evaluation. In addition there is the question of “allocation equity,” described as an equitable, or fair, distribution of an allocation of a shared resource to various stakeholders and third parties.

Although many individuals and organizations have tried for years to quantify social, environmental costs and values and other non-production values (e.g., valuing social, religious or aesthetic needs and desires or valuing ecological sustainability and ecosystem services), our inability to fully understand and to fully quantify the total impacts of our economic decisions and our inability to assign generally acceptable economic values to those actions has severely limited our ability to evaluate and balance the overall costs and benefits of such actions in economic terms. For example, water provided by a river or an aquifer is typically the basis of local or regional ecosystems and rivers are often the primary focus of local and regional development. Although they do provide direct economic services and values, they also provide many ecological services and values and non-economic social services and values to others who may not be participants in the withdrawal and use of water for a given economic activity that are typically not fully understood and are not or cannot be quantified in economic terms.

The Australian Chamber of Commerce, itself an advocate of the tradability of private property rights to water, recognizes the significant adverse effects, both environmental and socio-economic, that can occur with water trading is if water is taken out of the catchment (either tangibly by physically moving the water elsewhere or non-tangibly by virtue that a water allocation is granted or an entitlement is purchased) by a water purchaser with no intention of consuming the allocation or trading the allocation in the period it relates. (Australian Chamber of Commerce, 2004) Preserving the opportunities for future generations, often presented as intergenerational justice, is such an important value. Adam Smith realized

the problem with valuation of natural resources: (Kuttner, 1997, quoting Smith 1776, Lv.13, p. 52)

Nothing is more useful than water: but it will purchase scarce any thing; scarce any thing can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it.

Tradable property rights to water make the fourth leg of IWRM, good governance, problematic. An analysis of the history of water institutions demonstrates that among the characteristics for effective water management, stakeholder involvement and equitable participation are essential. (Gleick, 1998; Kakebeeke et al., 2000; Draper, 2002) The governance structure should assure equitable treatment of all interests involved with or impacted by the agreement. Mechanisms should exist for equitable participation, including participation by politically weak stakeholders, and consideration of ecosystems and future generations. All relevant stakeholders should be involved in the decision-making process. (Olem and Duda, 1995; Fort, 1998; Bandaragoda, 2000; Kakebeeke et al., 2000; Lubell, 2000; Planning, 2000; World Commission on Dams, 2000; Gooch et al., 2002) These stakeholders should include governmental and non-governmental organizations as well as private stakeholders. (Fort, 1998; German, 1998; Barlow and Clarke, 2002) Water management restricted to a private transaction between a willing buyer and seller essentially precludes this characteristic from the governance structure.

CONCLUDING REMARKS

The World Bank has proposed that nations and states introduce tradable property rights to water as a means to “increase the productivity of water use, improve operations and maintenance, stimulate private investment and economic growth, reduce water conflicts, rationalize ongoing and future irrigation development, and free up government resources for activities that have a public good content or positive externalities.” (Thobani, 1997) There is no question but the proposal has merit from a strictly economic view. However, under analysis, the proposal has some serious shortcomings that may have result in social, environmental and even long-term economic issues that diminishes our quality of life and ecological sustainability.

The water in our rivers and aquifers, unlike oil or gold, is an essential, shared, mobile and common resource that is used and reused for different purposes as it moves through the hydrologic cycle. Rivers and aquifers are usually hydrologically interrelated. Prior to capture by withdrawal or diversion of water, a claim of exclusive ownership is impossible to sustain. Water is different because different users utilize the same water repeatedly as the water travels downstream, in the case of surface water rivers, or downgradient, as in the case of groundwater aquifers. An upstream user, like Atlanta, Georgia withdraws much of the city’s reliable water supply from the Chattahoochee River, consumes a portion of the water, and then returns the greater part of the water to the river for use by downstream users such as Columbus, and even cities in Alabama and Florida.

This is not to say, however, that the benefits of the market cannot be captured to make water use in the United States, and elsewhere in the world more efficient and effective. Public-private partnerships for water services of various forms, despite some failures, have arguably shown to be effective in several of instances. (Segal, 2003; Smith, 2003) The conclusion is simply that the introduction of tradable property rights to water in order to bring economic efficiency to water use brings can result in significant difficulties in reaching the other goals of IWRM. While economic incentives have a useful, even critical, role to play in managing the public resource water, such incentives should not be confused with markets. The economic incentive for managing a common or public resource operate differently from true private, for-profit markets, and must be analyzed in a different fashion from the relatively free play given to markets. Ultimately the managerial responsibility must rest with public institutions, and not the vagaries of free markets.

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