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Melding Private and Public Interests in Water Rights Markets: Discussion

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Although the six-year drought in California has recently been declared over, it is clear from experiences there and other parts of the west (as well as in the southeast) that current methods of water allocation are deficient. In their paper on water rights markets, Lynne and Saarinen discuss the allocation of water by markets versus regulatory approaches (whether court or bureaucratic). The paper's "I-we" emphasis ends in a call to blend the two. Although I would have preferred the authors provide more of a theoretical basis as to how water markets do or do not work, this paper is a good first attempt to establish their argument.

One popular strain in recent economic literature is the primacy, if not perfection, of the market system as the proper place for all resource allocation decisions to take place. So called "incentive based," or "market cures" to every societal ill are turning up with regularity, particularly as a response to command and control regulations affecting water quality. For example, the Spring 1992 issue of the *EPA Journal* devotes half the issue to "Trading for the Future: New Approaches to Environmental Protection." While Lynne and Saarinen avoid this trend, they nonetheless also avoid a critical review of water markets.

However, it is impossible to be even a casual observer of the water situation in the west and not recognize the failure of the current system. Anderson and Leal call the water situation in the west a by-product of the federal government's water pork barrel. While the Bureau of Reclamation, the U.S. Army Corps of Engineers, and other agencies

have spent much of the past 80 years trying to "make the desert bloom like a rose," tens of billions of dollars have been spent on subsidized water to western irrigators. As Wahl notes, with interest-free loans and extended repayment schedules, irrigators often pay less than ten percent of the cost to store and deliver water. By the mid 1980s, irrigators benefiting from the California Central Valley Project had repaid only four percent of the capital costs --- \$38 million out of \$950 million (Postel).

It is clear that ways to improve the efficiency of water transfers are necessary. It is clear not only in the U.S., but in other parts of the world. Water auctions, for example, are being tested in Australia (Simon and Anderson). Although the current California drought is over, with the 1985 opening of the Central Arizona Project, water from the Colorado River to the metropolitan water districts in southern California was reduced by 500,000 acre-feet per year. Anderson and Leal note that significant water shortages are eminent unless some of the water used to irrigate the San Joaquin Valley is transferred to municipal uses. Cities in southern California pay about \$200 an acre-foot for water with an expectation that the price will go to \$500 an acre-foot for any new storage and diversion facilities. Water currently used by agriculture in the San Joaquin Valley can be delivered by state and federal water projects to farmers for as little as \$5 per acre-foot. Thus, as Anderson and Leal note, cities can certainly afford to pay their current \$200 an acre-foot to purchase water from San Joaquin farmers. The profits could be used to seek water conservation technologies or install drip-sprinkler

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systems. The obstacle is that San Joaquin farmers cannot sell water without federal consent. Obstacles to water markets also occur for reasons other than federal policy. An agreement was announced recently allowing Nevada to temporarily lease 175,000 acre-feet per year of water from the Colorado River from oil-shale developers in Colorado. The agreement would have Nevada pay \$200 million to build an off-stream reservoir near Grand Junction, Colorado and have water for 30 to 50 years at a price of \$50 per acre-foot. The agreement is meeting resistance from Colorado officials who are trying to block such interstate sales (*Waterweek*).

Yet, some water transfers are being accomplished. Postel shows that in 1991, 127 water transactions of various kinds were reported in 12 western states, up from 121 in 1990. Nearly all the water sold came from irrigation and about two-thirds went to municipal uses. Half of the 1991 transfers occurred in Colorado where water sold for \$2,140 an acre-foot -- twice the 1989 average price. Also, it was recently announced that the Clinton Administration is trying to drastically reduce water subsidies in the west. The plan would force farmers to pay surcharges to irrigate more than nine million acres.

However water markets are to work, water rights must be clearly defined. The trendy view advocating "letting the market work" is implicitly saying something about property rights.

This brings me to what I believe is a fundamental weakness with the analysis presented in the Lynne and Saarinen paper. Their argument rests on the observation that no government can adequately account for all private and public opportunity costs, nor can any market. Exactly! So the debate about water rights is not, as the authors' emphasis suggests, about doing a better job of blending the I and the We. The real debate about water allocation is a debate about property rights. The paper fails to start with what I believe to be the basic question to be answered: Whose preferences count? Once preferences are decided and property rights secured, matters of market versus regulatory action become clearer.

Once we decide whose preferences count, we can tackle the current problem in water markets --- the inability to transfer water rights. As noted in the recent National Research Council Report, the "Reclamation Era" has ended. We can no longer rely on the federal government to build new reservoirs to meet our growing water demands (see also Tarlock). Water to meet new demands will now have to come from reallocating existing supplies. In the southeast, we see this in the current "water wars" between Georgia, Florida, and Alabama. This case began when Georgia asked the U.S. Army Corps of Engineers to allow a reallocation of water from Lake Lanier as well as another 835 million gallons of water a day from the Coosa and Chattahoochee River watersheds to meet Atlanta's drinking water needs.

In general, the primary source of inefficiency in water markets involves the restrictions on water transfers, preventing water from moving to its highest valued use (Tietenberg). The existing mixed system of markets (whether characterized by prior appropriation or riparian doctrines) and regulators diminishes the degree of transferability so that marginal net benefits are rarely equalized. Even where regulation may work, economists have criticized the substitution of bureaucratically determined sets of priorities for market priorities. These analysts claim that the result is less likely to achieve an equalization of marginal net benefits. So, they say, more market solutions are needed. Again, what they are really saying is that property rights should be changed to reflect a different accounting of preferences. Water for agricultural irrigation is being transferred to city use. It is not clear that net benefits have increased. What is clear is that preferences have changed. As Schmid says, "one person's right is another's cost."

Reliance on markets to produce efficiency in water allocation also implies employing the most efficient pricing mechanism where price is equated to marginal costs. As Alfred Kahn showed, if we rely on marginal cost pricing we must accept two principles. First, the allocation of resources the marginal cost pricing rule produces is accepted only insofar as one approves the choice consumers make or would make. Thus, Kahn says that one need accept the result as optimal only if one is willing to

place a similar evaluation on the distribution of income. Kahn further notes two corollaries of marginal cost pricing. First, price must reflect all the marginal costs. As we know, externalities exist in water use. Second, the marginal cost pricing rule does not produce optimal results if applied only partially. This "problem of the second best" will certainly occur throughout the economy due to imperfections of competition, monopoly power and government policies that cause prices to diverge from marginal costs.

Regarding water and water markets, a few further comments are required. First, as Tietenberg shows, rules, rights of use, and markets should differ by the source of water. In fact, how we define efficiency depends on the water source. The problem with surface water absent storage is to allocate a renewable supply among competing users. Temporal effects are less important as future supplies depend on natural phenomena rather than on current withdrawal practices. On the other hand, groundwater withdrawals do affect the resources available in the future. So temporal allocation is crucial. Further, whether surface or groundwater, the resource moves freely across property and cannot be seized except by reservoirs. Not only does the quantity of water change from time to time, but the physical nature of water makes the definition and enforcement of rights difficult.

Second, in water markets we must be cognizant of not just efficiency effects but equity or distributional effects. The two of course are not necessarily complementary. Unlike other goods, it can be argued that efficiency effects should not predominate, but must be subsumed under equity effects. Schmalensee noted that economic efficiency is an instrumental or derived objective, not a basic social goal. While resource allocation should be done efficiently, importance must be attached to conflicting social goals. As Okin wrote, even economists would sacrifice efficiency in the pursuit of important basic social goals. A case can be made that water availability may fall under this category.

Third, to talk of using the market system to more efficiently allocate water implies some form of a competitive market framework. Yet Schmid said, "The conventional focus on competition also has ideological consequences. Some interests are not

served whether or not there is competition. Those who gain from policies and rights unrelated to the degree of competition are benefited when public discourse ignores the wide-ranging sources of their differential wealth and focuses on such questions as whether or not to enforce antitrust laws or even whether a particular product should be provided by public or private firm, regulated or unregulated, or whether welfare subsidies should be changed."

Of course water delivery is not characterized as a competitive system but more often is a monopoly (and/or a monopsony), a regulated monopoly, or at best an oligopoly. All are inherently inefficient by definition. The monopoly market is the one market model with the potential for minimum economic efficiency and substantial distortions of equity. Normally, we characterized water delivery as a natural monopoly, with a constantly declining long run average total cost curve produced by superordinary economies of scale. The economies of scale, along with an inelastic demand for water that provides owners with an opportunity to extract large rents and skew income distribution in their favor, usually results in public regulation. Even here, the notion of preferences is important. "Economies of scale create a human interdependence that is not controlled simply by ownership of factors of production. To advocate competition is not simply to favor consumers over would-be monopolists but to favor the interests of one group of consumers over another. And, of course, public regulation does the same thing" (Schmid).

Parenthetically, a fruitful area of research would be to investigate the natural monopoly characteristics of water supply. Are we sure water can be characterized as a natural monopoly? There are certainly large barriers to entry in the water delivery industry, both in terms of capital requirements and governmental permitting. However, many small water systems exist. In Georgia there are nearly 600 public systems and 2,200 licensed private water firms throughout the state. While water delivery to an individual home may also exhibit characteristics that suggest a need to regulate a natural monopoly, the same was said for telephone service until technology changed. Also, Boyer has shown that for multiple product producers, the standard definition of a natural monopoly does not apply. Water suppliers do not

necessarily sell a homogeneous product at a single price. Irrigation water is different from drinking water. With water reuse and recycling becoming common throughout the country it may be time to revisit the natural monopoly definition of water delivery.

Similarly, water markets do not resemble other markets. As already noted, there has been a long tradition of subsidized water that has greatly distorted prices, particularly in the west. Wahl discusses how one result of federal water subsidies is that the low price of irrigation water in the west does not reflect its true value. Additionally, water distribution systems subsidized by property taxes (or other general tax sources) are not unusual in the east. Water is concentrated in large blocks in both public and private hands. Further, water must support a wide variety of public values (Tarlock). While most work in the water economics literature has focused on finding ways to make water transfers more efficient, i.e. lowering transaction costs, often neglected are the third party effects. Third parties are seeking recognized interests in transfers which of course will raise transaction costs and lower the efficiency of markets.

Also, as Postel contends, efficiency aspects of water apply not just to markets but to its use. Not only must markets exist for buying and selling water but we must also consider other functions that water performs that are rarely valued in a market. These include habitat protection, species preservation, recreational use and aesthetics.

Finally, water pricing, whatever the market structure, is a great source of inefficiency. Rates are almost always too low because of the use of historic average costs rather than marginal costs (Tietenberg). Further, marginal scarcity rent is almost never considered. The price of water delivered by municipal systems is derived from the costs of production and distribution. Rarely is water treated as a commodity with an associated price. Also, most rate structures in the country still rely on decreasing block rates that use cheap water as an economic development tool. Results from the American Water Works Association's Water Industry Data Base indicates that 40 percent of the utilities surveyed nationwide use declining block rates and 44 percent use a uniform rate.

Two last comments about the Lynne and Saarinen paper. First, in a rhetorical question the authors ask whether anyone has systematically studied southern values and philosophies pertaining to the water allocation process? This is a great question and a great research area. The answer, I believe, is no they have not.

Second, at another point in the paper, in talking about ways to allocate water, the authors note that "life is hard." Well, so is hitting the curve ball but we have people who can do that. So too do we have people who can figure out water markets. It is time for agricultural economists to be concerned about water not just as an input to farm production but as a resource that can benefit from our analysis.

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