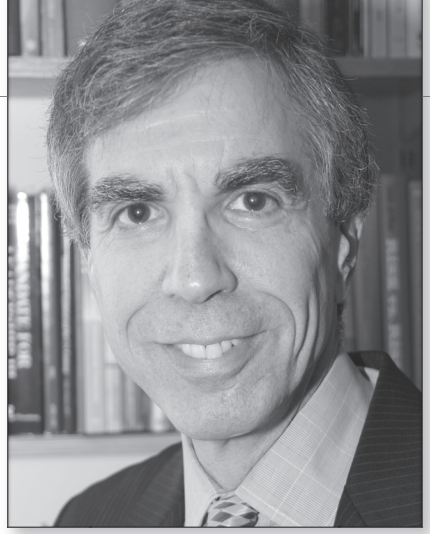

By Robert N. Stavins

Misconceptions About H_2O Pricing

Throughout the United States, water management has been approached primarily as an engineering problem, rather than an economic one. Water supply managers are reluctant to use price increases as water conservation tools, instead relying on non-price demand management techniques, such as requirements for the adoption of specific technologies and restrictions on particular uses. In my column in the November/December 2006 issue, I wrote about how — in principle — price can be used by water managers as an effective and efficient instrument to manage this scarce resource.

In a recent white paper, "Managing Water Demand: Price vs. Non-Price Conservation Programs," published by the Pioneer Institute for Public Policy Research, Professor Sheila Olmstead of Yale University and I analyzed the relative merits of price and non-price approaches to water conservation. We reviewed well over a hundred studies, and found strong and consistent empirical evidence that using prices to manage water demand is more cost-effective than implementing non-price conservation programs.

Despite such empirical evidence regarding the higher costs of non-price approaches to water conservation, many constituencies continue to prefer them. Professor Olmstead and I believe that this reliance on inefficient command-and-control approaches to water management may be due — in part — to several common and influential misconceptions regarding the use of water pricing.

One misconception is *because water prices are low, price cannot be used to manage demand.* The fallacy that low prices somehow obviate the use of price as an incentive for water conservation may stem from economists' definition of a price response in the range observed for water demand as "inelastic." There is a critical distinction between the technical term "inelastic demand" and the phrase "unresponsive to price." Inelastic demand will decrease by less than one percent for every one percent increase in price. In contrast, if demand is truly unresponsive to price, the same quantity of water will be demanded at any price. This may be true in theory for a subsistence quantity of drinking water, but it has not been observed for water demand in general in 50 years of published empirical analysis.

Inefficient approaches to water management may be due to common misconceptions regarding the use of water pricing

A second misconception is *water customers are unaware of prices, and therefore price cannot be used to manage demand.* If this were true, the hundreds of statistical studies estimating the price elasticity of water demand would have found that effect to be zero. But this is not the case. Instead, consumers behave as if they are aware of water prices. The hundreds of studies we reviewed cover many decades of water demand research in cities that bill water customers monthly, every two months, quarterly, or annually; and in which bills provide everything from no information about prices to very detailed information. Our conclusion is that water suppliers need not change billing frequency or format to achieve water demand reductions from price increases, but providing more information may boost the impact of price changes.

A third misconception is *increasing-block pricing provides an incentive for water conservation.* Under increasing-block prices, or IBPs, the price of a unit of water increases with the quantity consumed, based on a quantity threshold or set of thresholds. Many water utilities that have implemented IBPs consider them part of their approach to water conservation, and many state agencies and other entities recommend them as water conservation tools. But analysis indicates that increasing-block prices, per se, have no impact on the quantity of water demanded, controlling for price levels.

A fourth and final misconception is that *where water price increases are implemented, water demand will always fall.* Price elasticity estimates measure the reduction in demand to be expected from a one percent increase in the marginal price of water, all else constant. Individual water utilities may increase prices and see demand rise subsequently due to population growth, changes in weather or climate, increases in average household income, or other factors. In these cases, a price increase can reduce the rate of growth in water demand to a level below what would have been observed if prices had remained constant.

Raising water prices (as with the elimination of any subsidy) can be politically difficult. This is probably one of the primary reasons why water demand management through non-price techniques is the overwhelmingly dominant approach in the United States. But the cost-effectiveness advantages of price-based approaches are clear, and there may be some political advantage to be gained by demonstrating these potential cost savings.

Robert N. Stavins *is the Albert Pratt Professor of Business and Government at the John F. Kennedy School of Government, Harvard University, and Director of the Harvard Environmental Economics Program. He can be reached at robert_stavins@harvard.edu.*