The value of water versus the price we pay

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It's a fact that humans cannot live – let alone engage in economic activities – without water. This fact would support a claim that the value of water is equivalent to the value of all of our economic activities, but that claim is a bit too bold.

For example, we can't build cars out of water, grow food without land and labor, or operate computers without electricity. It's obvious, in other words, that water is necessary for economic activities, but it's not sufficient. Water is combined with other inputs to produce economic outputs, with each input responsible for a share of the product's final value.

But what share, exactly? That question is usually academic – most people don't consider the value added by water when they make pasta at home. In fact, most people don't think about the value of water at all until they start to argue over the importance of water, usually with a goal of directing some of that water to themselves. It's also a difficult question to answer because water – unlike other inputs – is usually sold at a price that covers the cost of delivery, not a price that ranks and reconciles different values by balancing supply and demand.

Consider an example of a farmer who grows five tons of tomatoes on an acre of land that sell for $1,000 per ton. Against those $5,000 in revenues he incurs costs of $500 for renting the land, $300 for renting and running machines, $1,000 for labor, and $200 for pumping groundwater onto the land. Now here's the tricky part: does water account for 10 percent of his total costs of $2,000 or more? Why more? Because the "cost of water" is not just the cost of pumping water from underground but also the cost of water as a resource, a cost that was included in the cost of renting the land. It would be easier to calculate the cost of water if it was purchased from a canal and used to irrigate dry land. In that case, for example, the land rent might be $200 and the cost of canal water – a cost that reflects pumping charges and infrastructure as well as the value of water as a resource – might be $500 in total.

Also note the problem of paying $200 to pump groundwater. That price may reflect the cost of energy and a machine, but it may not reflect water's true value in the instance that the water comes from an aquifer that's shared with others and which nobody owns. In that case the price of renting the land may be low because the water underneath the land is shared by others in a "common pool" that is owned by all, used by all and perhaps abused by all. In that circumstance, the land rent may be lower because there's no guarantee that the ground water will be there when you want it. Water with stronger property rights (whether delivered in a canal or adjudicated among owners overlying an aquifer) will not just be more secure and thus more valuable. It will be rationed efficiently among farmers with a price mechanism, in the same way that they use a price mechanism to allocate land, machines, fuel, labor and other commodity inputs.

Such a market mechanism would reveal the value of water among farmers bidding for water from a canal, for example. Say that water sells for $1,000 in such an auction. In that circumstance, water's share in total costs would be $1,000 out of $2,500 in total cost (dry land costing $200, machines for $300, and labor for $1,000), or 40 percent of total costs.

So what's the value of water? Although we can be sure that it's NOT $200 or 10 percent of the value of those tomatoes, we cannot say its exact higher value, since that depends on where you stand. The water may be "worth" $1,000 (its purchase price), $2,000 (its share of the tomatoes' market value), or some number based on the retail price of tomatoes, or even a percentage of the "value of happiness" that consumers assign to the tomatoes they eat. The same can be said about any input, of course, but the discussion of water values is often complicated by the facts that water can be used directly (drinking, for example) and that water is rarely allocated in transparent market conditions.

So keep these ideas in mind when discussing water: Water is necessary for our economy; we have different values for water; allocation mechanisms do not always consider these values; and – most important – the price you pay or cost of water may not reflect the value of water to you or others.

About David Zetland
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