ECONOMIC INSTRUMENTS IN INTEGRATED WATER RESOURCE MANAGEMENT: ADVANTAGES AND CONSTRAINTS

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by

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Executive summary

Economic instruments are becoming increasingly popular in integrated water resource management: the most prominent examples are privatizing water rights and creating water markets. Many Latin American countries are trying to shrink and restructure State activities, which involves replacing some legal regulations with a more decentralized approach; this in turn depends on stronger institutional capacity in the private sector and civil society, as the IDB strategy recognizes. The main benefits of this approach are greater flexibility and efficiency of water use and allocation. In practice they are most likely to be realized at the local level and among the same type of users, or in certain cases of urban expansion into rural areas. Market mechanisms tend to fail, however, when faced with more regional and inter-sectoral issues, such as multiple water uses, river basin management, and environmental protection. They are particularly ill-suited to resolve conflicts or distributional questions, which are essentially legal and political functions. In other words, using economic instruments instead of State regulations makes the judicial system more important (especially when it comes to more complicated problems). Improving judicial capabilities should be an integral part of pro-market reforms, together with strengthening private, social, and non-governmental organizations. We should be more careful about what kind of problems we expect economic instruments to help solve, and not imagine that they can substitute for political and social decisions.

Introduction

My topic today is the use of "economic instruments" in integrated water resource management. The topic has been placed within this Workshop's theme of the "social and economic role" of water, but it could easily fit the other themes as well. I put "economic" in quotation marks because one of my main points today is that the term can be quite misleading. What we call "economic instruments" cannot be separated from their legal, political, and institutional arrangements. This means that using these instruments is complicated, despite the apparent simplicity that is often part of their appeal. I will illustrate this argument by discussing two specific examples of economic instruments: water markets and the privatization of water rights.

This perspective reflects my own interdisciplinary training in law, geography, and political economy. If you were expecting an economist, I'm sorry to disappoint you.

As the people in this room know very well, water has a unique importance in local and national economies. More than other natural resources it knits together different economic activities, vital to each but taking different and changing forms. Water is necessary to all other resource uses. River basins are often the backbone of regional economic structures, supplying water for different uses in agricultural, urban, industrial, and other areas. Because of this diversity and inter-connectedness, the problems of integrated water resource management are very much like environmental problems in general.

I. Overview of economic instruments: Privatization of water rights and water markets

In recent years there has been a surge of interest in policies favoring privatization and free markets in water rights. In Latin America this interest reflects the rise of neoliberal views of economic theory and policy in general. In the case of water resources there are also several particular factors pushing for a more pro-market approach, not least of which is the mixed record of State intervention in the past.

More pro-market water policies have several advantages and potential benefits. At their most effective they increase the flexibility and overall efficiency of water allocation and use, while decentralizing decision-making. But markets perform some functions better than others, due to a range of limiting social, institutional, political, and geographic conditions. We need to be more careful about what kinds of problems we expect privatization and market forces to help solve. To take advantage of such economic instruments we must focus more attention on their legal and political context.

The Report by William Lord and Morris Israel[1] has a sophisticated grasp of these complexities. I share much of their diagnosis and analysis of the current situation in Latin America and the Caribbean. Their discussion of water markets in particular

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[1] A Proposed Strategy to Encourage and Facilitate Improved Water Resource Management in Latin America and the Caribbean, prepared for the Environment Division, Social Programs and Sustainable Development Department, Inter-American Development Bank (March 1996).

is balanced and reasonable. One of their principal arguments is that the focus of water resource management world-wide must shift away from new development toward institutional reform and innovation. They conclude by recommending that the IDB support increased institutional analysis and capacity-building.

In this paper I want to flesh out some of the elements that such institutional analysis should incorporate. In particular I argue that market mechanisms have the best chance of operating effectively at the local level and among the same type of water users (especially farmers), or in certain cases of urban expansion into rural areas. In these situations they may increase economic efficiency, though even so they are sensitive to many constraints. But markets tend to fail when confronted with more regional and inter-sectoral issues, such as multiple water uses, river basin management, and environmental protection. Market mechanisms are especially ill-suited to resolve conflicts or make policy decisions. For dealing with these problems we must rely on legal or political processes, as discussed by other participants in this Workshop.

The IDB's strategy for integrated water resource management should consider economic instruments in light of these complexities. Unfortunately that prevents the easy recipes that are so useful in shaping policy. But taking this approach is consistent with the IDB's support for broader efforts in judicial reform in Latin America, recognizing how crucial are legal and judicial systems to the functioning of market economies.

II. Advantages and benefits

There are many reasons to adopt pro-market water policies, in which I include the distinct goals of privatizing water rights, privatizing public infrastructure or enterprises, and fostering market transactions. These policies do not always go together, of course. You are all familiar with the main reasons so I will not go into great detail; the important point is that different objectives often require different sorts of reforms of legal and institutional arrangements.

A primary objective of these policies is to reduce the role of the State in water management. This means limiting the scope of State administrative agencies' involvement in planning or regulating water uses, decentralizing decision-making to the private sector and civil society. It may also include cutting State subsidies for building or operating water-works or for providing water supplies. Cutting subsidies, of course, is often politically more difficult than cutting regulations. In the case of privatization, there may be the separate goal of increasing State revenue -- one-time-only or more steadily -- through sales of public assets.

Another key objective is to increase the flexibility of water uses, and ease the reallocation of water rights as conditions change. This requires private, exclusive, and transferable property rights, free of major restrictions. Such tradable rights allow the private exchange that is the essence of a water market; they are its most crucial precondition. A functioning market also

requires "getting prices right" -- removing subsidies and rules that mask the real costs of developing and using water and thus distort incentives. Higher prices would stimulate transferring water to its most valuable uses, either within agriculture or from there to urban and industrial sectors. They would also encourage investment in conservation, since water saved can be sold.

These policies rely on the price system's ability to coordinate uncertain and dispersed information, often claimed to be one of its main advantages over centralized planning. We will see below, however, that price signals are not "neutral" but rather are inevitably shaped in part by prior political decisions and legal rules. Policies of cost recovery illustrate this point as well, since at heart they involve political decisions to influence price signals.

III. Limitations and constraints

Realizing the potential benefits of water markets in practice depends on overcoming a number of serious limitations and constraints. Here I will mention three general problems that affect the conditions for successful reforms. In the first place, water is subject to several familiar kinds of "market failure," as the economists call it. These are described in any decent economics textbook (especially environmental economics), and consist of factors which prevent markets from functioning as they should: externalities or third-party effects, uncertainty of information, varibility of supply as well as demand, high

transactions costs, natural monopolies, and poorly-defined property rights. These textbook examples may be "old-fashioned" but they are none the less valid, despite the confidence of some neoliberals that they can be overcome with enough willpower and creativity.

Second, the goal of "clearly defining" property rights is harder than it may seem. We saw above that a precondition for markets is that property rights must be defined as commodities -- private, exclusive, and transferable. (In the case of water, the "private property" in question is often a right to use rather than ownership of the resource itself. In practical terms this is a purely formal distinction, though it may have political significance if public ownership helps justify State intervention.) Even if legislation declares water rights to be commodities, it is impossible to fully implement. Water resources by their nature are inter-connected, so that how they are used in one place directly or indirectly affects other places and other users. Transferring water rights or changing uses often have third-party effects (externalities) on other rights-holders, non-rights-holders, or the natural environment. Some of these effects may be positive, but to prevent or reduce the negative ones requires putting some duties and limitations on property rights -- rather than exclusive and transferable they are overlapping claims to a shared resource.

Defining property rights to water must take these relationships into account. The relations may be fairly simple, as in the case of neighboring farmers trading irrigation rights among each other. Here a market exchange can solve the problem of how to

allocate available waters to the most valuable uses. But more complex relations require coordination that continues and evolves over time: a simple exchange can rarely address problems of multiple water uses (consumptive and non-consumptive) or control of pollution. In short, defining property rights is a continuing process, and relies on institutions beyond the realm of the market itself.

Third, markets by their nature are unable to handle conflict resolution, because they have no means of deciding among qualitative alternatives. The market model for coordinating multiple uses depends on private bargaining and negotiation of contracts among rights-holders. When bargaining breaks down in conflict -- increasingly frequent with water resources, which is why we are here today -- a solution cannot come from the private sphere. The great strength and weakness of the market as an institution is its reliance on the measure of "exchange-value" (money or price, in common language). That is, the essential logic of markets is to compare different things according to the common, quantitative yardstick of price. This is a measure of the relative value of different things (resource uses, rights, types of labor, etc.) which abstracts from their concrete, substantive differences; by reducing these differences to the common denominator of price, we can more easily compare and choose between them.

But many of the toughest problems in integrated water management are inherently about weighing concrete, qualitative differences (or comparing "use-values"). Typical examples are

conflicts over third-party effects and distributional impacts, such as between irrigation and hydroelectric demands on a shared reservoir, or between polluters and consumers of the same river. These conflicts can only be resolved through legal or political procedures, in a wider framework of rules and institutions.

As a result the judicial system is especially critical to how pro-market policies work. Greater private autonomy and less State regulation mean that the scope and frequency of conflicts reaching the courts will almost certainly increase. The more that State intervention is reduced, the more substantive and technical will be the conflicts that courts must hear, and the broader policy implications they will have. If we use market-oriented economic instruments in water policy, therefore, the institutional capacity of the judiciary is a primary concern.

IV. Lessons from Chile

Although my presentation is not supposed to be a case study, a brief description of the situation in Chile will illustrate these rather general arguments. If I had more time I would add examples from the Western United States and Spain.

In 1981 the Chilean military government passed a new Water Code that privatized water rights and separated them from land, reduced State regulatory authority, and attempted to stimulate market forces in water use. In large part it was an over-reaction to the previous Code, which was highly State-centered and supplemental to the Agrarian Reform of 1967. The 1981 Code's

pro-market aspects were designed by a group of neoliberal economists, who wanted to provide incentives for more efficient water use and allocation by making water rights a commodity and taxing them separately from land. The tax was opposed by agricultural and other interests and so was dropped. In this way water rights were privatized without any financial or legal obligations; the State receives no fees and cannot require an owner to actually use his rights.

During the subsequent 15 years market transactions of water rights in Chile have been routine but relatively infrequent in most areas. There is some disagreement on this point but the weight of evidence supports this conclusion; there are local exceptions, but their unusual conditions tend to confirm the general rule. Because of the inactive trading a relatively small proportion of water has been reallocated. Water prices have remained fairly low and market incentives for conservation have been ineffective; where irrigators have invested in more efficient technology, it has been to increase productivity and cut operating and maintenance costs, not in order to sell the water saved as a result. In the near future some of this may change as demands increase in many areas.

Why has the water market been relatively limited in practice? In brief, because there is a wide range of factors that raise transactions costs and present obstacles to exchange. They include problems of inadequate or rigid infrastructure, uncertain property titles, and cultural and psychological resistance to

treating water as a mere commodity. They also include ambiguous or inconsistent price signals, reflecting the many factors that influence water's value.

In some ways water's value is high: without it agricultural land is worth little, so that for farmers water rights are typically not for sale. People also hold onto their unused, apparently "surplus" rights as insurance against drought years (in Chile water rights are generally defined as proportional shares of varying flows, not as fixed quantities). There are few willing sellers, on the whole. Yet in other ways water's value seems low. In most of Chile it is not yet scarce enough to force potential buyers to bid up the price. They often have cheaper options for increasing supplies, such as pumping groundwater; increasing their own efficiency of use if they already have any water rights; or acquiring secondary or contingent rights and storing the water. Low prices also help explain why there has been less private investment in irrigation technology than was hoped, so that since 1985 the government has had to subsidize it. In part, of course, prices remain low because of the military government's original decision to privatize rights without attaching obligations.

This does not mean the 1981 Water Code has failed -- on the contrary, several of its provisions have almost certainly been beneficial. Increasing the legal security of private property has encouraged investment in water use and development in some areas, and has helped to consolidate the autonomy of local canal associations. These organizations vary greatly in their technical,

administrative, and financial capabilities, but in many places they do a reasonable job of day-to-day water management. In addition, the Code's flexibility is an advantage whether or not the market is active, simply by making it easier to change allocation or use of resources if desirable. It seems likely that water transactions will somewhat increase in the future as demands grow.

The main lesson of Chile's experience with its present Water Code is that some aspects have worked better than others in practice, and so far the more market-oriented mechanisms have been the least operative. They have had a moderate impact in the agricultural sector, but the Code has worsened the situation of multiple water uses, river basin conflicts, and environmental management. Broader private rights and reliance on voluntary negotiation have failed to resolve these problems. In the absence of State regulation many of the conflicts have gone to the higher courts, but judicial performance has been quite uneven: Chilean judges know little about water matters and have been trained to avoid deciding on the basis of policy considerations. In short, privatization and markets were adopted without adequate attention to legal and institutional arrangements.

V. Conclusions: Key considerations for use of economic instruments

I want to conclude by drawing together my general comments at the beginning with lessons from my experience in Chile, to offer several considerations which are critical to successful use of economic instruments such as water markets and privatization

of water rights. These considerations are closely related to other central themes of this Workshop, especially water resources planning, institutional innovation, the participation of stakeholders, and river basin management.

*** Applying these instruments will presumably lead to transfers and reallocation of water rights and changing patterns of water use. Before doing so there should be a reasonable degree of social and political consensus in favor of such changes. This may require some form of substantial compensation to those injured as a result.

*** The new rules and incentives needed to implement these reforms should impose market discipline to raise efficiency rather than simply transfer public resources to private hands. Privatization should define duties together with rights; "property" is made up of both. Market operations depend on price signals, and these are strongly influenced by law.

*** With the appropriate rules and institutions in place, market mechanisms can be effective particularly at the local level and involving the same types of water use. They can also facilitate broader trends in regional economic development, such as the urbanization of agricultural land. If these trends are controversial it will affect trading.

*** Market mechanisms are incapable of handling problems of multiple water use, third-party effects, river basin management, or conflict resolution. Instead these issues require some kind of social or political action beyond private transactions, structured by law.

*** Markets and privatization increase private autonomy while generally reducing the State's administrative role. This has two major consequences: one is that it makes the court system more important in carrying out its function of conflict resolution. With less State regulation courts are likely to hear cases involving complicated technical issues and policy implications. However, at present few Latin American judiciaries seem to be capable of taking on this added responsibility without significant reform.

*** The other consequence is that it highlights the need to improve other forms of public institutional capacity in order to supplement or correct the limitations of markets and private initiative. This includes local users' associations, non-governmental organizations, and other representatives of civil society, as the vital elements in a water management strategy "from the bottom up." It also includes improving the effectiveness of State agencies, which retain an indispensable role in designing and enforcing rules and incentives. How this is done will depend on the political conditions in different countries.

*** Finally, economic efficiency should be a primary criterion for evaluating water and other environmental policies. But we must remember that efficiency can only be determined and used as a standard of comparison by assuming an initial distribution of resources and set of institutional arrangements -- which are precisely what is at issue in many water management situations. These are social, legal, and political problems and we should not expect economic instruments to solve them.

Questions about economic instruments for working groups at IDB Workshop on Integrated Water Management, Costa Rica, 6-7 May 1996

1. In your countries, which specific objectives and factors have been most important in motivating proposals for privatization of water rights or water markets? (E.g. water scarcity? government budget cuts? growth of a particular economic sector? etc.)

2. What is the capability of local water users' organizations in your countries to record and monitor water rights transactions (including third-party effects)?

3. In your countries, what is the relationship like between State water agencies and the courts in dealing with water resource conflicts? Are there other public institutions which are particularly important in conflict resolution?

4. If free water rights trading were allowed in your countries, would inter-sectoral transfers (e.g. agriculture to urban) have more impact on water management than a market within a given sector (or type of use)?

5. In your countries, should the short-term priority of the IDB's activity in supporting use of economic instruments in integrated water management be oriented mainly at the local, regional (river basin), or national levels?