Evaluating changes in water institutions: methodological issues at the micro and meso levels

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Abstract

Institutions (formal rules) governing water allocation and use are often critical to a nation’s development and prosperity. It is often necessary to change water institutions as economic, physical and political circumstance change. In this paper, a framework is presented to help understand the potential and need for change in water institutions. The pressure for institutional change can be analyzed at the micro level, in terms of the incentives for individuals to organize in order to influence the structure of rules governing water. Economic incentives and interest-group politics combine to produce changes that may or may not be efficient. Change in water institutions can also be evaluated at the meso level, where the structure and sequencing of actual change is at issue. The concepts of nesting, path dependency and institutional transaction costs are particularly useful in understanding this level of change. The concepts presented can help economists evaluate the pressure for, and obstacles to, institutional change in a particular country. These insights may be used by those interested in adapting and designing water institutions that yield improvements in the use of water resources.

Keywords: Water institutions; Institutional change; Transaction cost; Political economy

1. Introduction

Wise use of water resources is central to economic prosperity and natural resources policy in many countries around the world. While nations may differ in their aspirations, stages of development and level of water scarcity, the allocation and use of water resources are often critical to achieving specific regional and national goals including efficiency, equity and overall social welfare. Because economic circumstances change over time, it is often necessary or desirable to change the laws and policy governing water allocation and use in order to solve problems and take advantage of opportunities. Changes in the situation faced by water users and related stakeholders may
produce calls for change in water institutions as well. The importance of innovation as it applies to water institutions provides the focus for this overview. The term “water institutions”, as used here, refers to all the formal laws, policies and administrative rules governing water allocation and use in a particular context. Essentially, water institutions embody the relationships between people via their relationship to things, in this case water (Schmid, 1972). In analyzing institutions, it may be useful to keep Ostrom’s (1990) categorization of institutions into constitutional choice rules, collective choice rules and organizational rules as well as that of Saleth & Dinar (2004) in terms of legal rules, policy rules and organizational rules.

Historically, physical structural projects have been relied upon to address evolving water conditions and changing economic needs. Subsequently, policymakers have turned their attention to demand side management (like conservation and pricing) in an effort to use the resource wisely. More recently, analysts and policymakers have been interested in water institutions themselves and how they can be designed in a way to cope with change and facilitate the achievement of social and economic goals. The subfield of economics devoted to analyzing institutional change, especially as it applies to water resources, is very new. The concepts and theories utilized are fairly primitive and are evolving quickly in exciting ways. Commons (1934), North (1987), Adelman & Lohmoller (1994) and others have made important contributions to the economic analysis of institutions in general while Bromley (1982), Ruttan & Hayami (1984), Ostrom (1990), Griffin (1991), Dinar (2000) and Saleth & Dinar (2004) have made contributions in the area of water resources.

The objective of this paper is to present an overview of what economists know, or think they know, about how the pressure for institutional change develops, what dynamics are pertinent to the process of change and how the impact of innovation may be evaluated and investigated. Analysis of institutional change is challenging for a scholar in any discipline. From an economic perspective, it is tempting to reduce the study to a benefit–cost analysis of water use before and after institutional change. However, the analysis requires much more. Fundamentally, institutional change is in the realm of political economy and requires interdisciplinary study. To gain real insight into and understanding of the role and importance of water institutions, the analyst must know something about hydrology, earth sciences, politics, history and culture. The field is complicated and difficult and the analysis is usually neither elegant nor simple.

Economists have certainly contributed to the debate about changing water institutions. At the very least, economists have the tools to evaluate the need for innovations from an efficiency perspective and can evaluate the economic consequences of actual or potential change in water institutions. The concepts presented here are much broader. The hope is to generate some insights into and ideas about why and how water institutions change and what factors should to be looked for in order to evaluate actual change at the micro and meso level. The micro level refers to the fundamental forces that generate pressure for institutional innovation, often deriving from individual human values and interests. The meso level refers to the structure and dynamics of the actual process of institutional change and the factors that may facilitate or pose obstacles to innovation.

There are some notable differences, in terms of their amenability to analysis, between the micro and the meso level. Many micro-level rules (often informal) prove difficult to change as they are strongly nested in the social and cultural milieu of the community. On the other hand, they may be easier to evaluate. For example, if they are small scale, information requirements may be small as well. Meso-level institutions may be relatively easier to change (North, 1990), but difficult to evaluate owing to substantial information requirements. Throughout the paper, examples from a
variety of countries are provided and described in order to illustrate points and lend some concreteness to the concepts. Table 1 lists some of the country examples and the concepts they illustrate. Economists would expect the country context to generate some diversity in the institutional approaches taken to provide access to and to allocate water. Nevertheless, there may well be some overlap in circumstances faced by different countries which may create significant opportunities to apply what has been learned from the experience in one country in order to address and resolve the problems faced by another.

2. Evaluating change at the micro level

Evaluating change in water institutions requires some understanding of political economy. The economic understanding of political economy is rooted in the theory of interest-group politics. The idea is that one must understand the perspective and interests of stakeholders in order to evaluate the pressure for change and also the potential impact of actual change.

2.1 Interest-group politics

The theory of interest-group politics rests on the idea that individuals are both rational and self-interested (Olson, 1965). In standard economic analysis, we assume individuals with a stake in water use and allocation will do their best to meet their own individual objectives, within the existing structure of rights and laws (the initial endowment of income and other resources, including water). In this case, the logic is extended to assert that individuals with a stake in water allocation will also seek to change the rules governing allocation in a manner that promotes their interests. Moreover, they will attempt to organize themselves with other like-minded parties in a concerted effort to change policy by pressuring political actors.

It should be noted that, implicitly, the theory of interest-group politics assumes some form of democratic government (the theory also only addresses changes in formal institutions, when, in fact, informal institutions are often paramount in many countries). If, in fact, government is
centralized, an alternative model of politics is certainly called for. Hearne (2004) notes that in Mexico, prior to the election of Vincente Fox in 2000, political power in the country was concentrated within the presidency. As a result, interest-group pressure to change water institutions was largely irrelevant.

It is important to recognize that individuals with a stake in water use and allocation are not limited to water users alone. Of course, municipal, agricultural and industrial water users who rely on diversions or extractions to operate their businesses are stakeholders. In addition, however, the stakeholders include non-water users who have an interest in related outputs or in-stream uses, like wildlife preservation, recreation and aesthetic environmental quality. Obviously, the goals of interested parties are not always similar and conflicts between interest groups arise.

The ability of a particular interest group actually to organize and bring pressure to bear on the political system depends on, among other things, (1) the benefits and costs that will be incurred by individuals as a result of changing the rules and (2) the transaction costs associated with organizing with other individuals. For example, consider a case of a large group of farmers (say 200), each farmer having a stake of US $100 in changing a particular water regulation in his favor. However, the cost of getting organized would involve some travel and legal costs amounting to $125 per farmer. On the other hand, assume a small set of industrial users (say 5) each having a $1,000 stake in maintaining the status quo. Also assume that the transaction costs of organizing the industrial users come to only $150 per firm, perhaps because an annual industry meeting already exists, so that the potential net gain of $850 is sufficient to stimulate action.

In this case, the pressure to change institutions will never materialize, even though the gains to farmers ($20,000 total) far exceed the potential loss to industry ($5,000), because, at the individual level for farmers, the costs of getting organized more than offset the potential gains, thereby eliminating the incentive for political action. There are a myriad combinations of groups, stakes and transaction costs where each generates a unique outcome in terms of political economy. How policymakers respond to this pressure is another matter, which is treated in the meso-level discussion.

2.2 Equilibrium and evolutionary change

Institutions are in political economic equilibrium when there is no pressure or, more likely, insufficient pressure for change. Institutions are in disequilibrium and may change when the political clout of potential winners exceeds the political clout of potential losers (stakeholders in the status quo). Because there is no clear, direct and proportional relationship between potential economic gains and political clout, actual change may or may not enhance economic efficiency. The objectives that motivate interest groups to press for change are not necessarily purely economic and are certainly not entirely monetary, even when they are economic in the larger sense. An interest-group objective may concern economic interests, equity concerns or general social welfare issues as explained in the next section. The objectives of groups interested in water resources are quite diverse and are changing, which means new players come to the table over time in the competition for favorable political outcomes.

Institutions change at different rates and in different directions in different regions and contexts. Clearly, the natural environment is a factor. Water institutions in arid countries garner substantially more attention than water policies in humid regions. For example, in the USA in the eastern,
more water-rich part of the country, the riparian principle was chosen as the original allocation guide. Under the riparian system, property owners have the right to utilize bordering streams, with no explicit limit on beneficial use. In the arid west, water is allocated based on prior appropriation, which requires diversion from the stream (perhaps to relatively remote locations), with strict limits on the amount of use. However, even within arid regions, institutional change has varied depending on, among other things, the structure of interest groups at a particular time, the cultural context from which these groups and their goals emerge and the structure of present leadership. For example, while both Wyoming and Colorado water laws rely on prior appropriation, they have substantially different dispute resolution mechanisms, which were most probably influenced by the philosophy of important leaders at the time the laws were developed.

As institutions evolve incrementally over time, evaluating their performance is inescapably incremental as well. There is no once and for all solution. For example, in the eastern USA, many riparian systems have gradually evolved into permit systems, as water has grown relatively scarce. Evaluating performance in a positive way requires some notion of improved consistency between social goals and the institutional structure. The principles of efficiency, equity and overall social welfare may be used to evaluate performance since they indicate the ability of various interest groups to achieve their objectives or, alternatively, face significant frustration.

2.3 Economics goals and efficiency

Undoubtedly, the pursuit of direct economic gain is the driving force behind many changes in water institutions. Agricultural interests and other producers are often interested primarily in their ability to be profitable. However, the extent to which a particular interest group’s economic improvement corresponds to an overall increase in economic efficiency is only loosely related. In the interest group in question, economic gains are offset by losses elsewhere in the system and their economic position may improve while overall efficiency declines. From an aggregate perspective, the efficiency question is: Does the potential or actual change in water institutions result in increased net economic benefits to the society as a whole? This question is extremely important because regions and states that manage to employ institutions that yield the greatest net gains prosper and grow economically, which is often central to the social well-being. At the micro level, potential gains in this sector are largely determined by incentives that encourage efficient water use.

It is indeed fortunate if the objectives of the politically prevailing interest group coincide with greater economic efficiency. If, however, it does not, economists have a professional responsibility to identify opportunities to change water institutions in a way that could increase economic efficiency. Once identified, the challenge becomes making persuasive arguments in the political arena in order to influence actual policy. Institutional arrangements are critical in creating incentives because they (1) define who has access to water resources, (2) establish the range of (legal) options open to legitimate water users and (3) determine who can claim income from water use and who will bear the cost of water use. As such, they are primary in terms of structuring incentives and producing the resulting economic outcome. Economists assert that, given the choice domain established by water institutions, individual water users (and others) will behave rationally in a way that maximizes the achievement of their economic or non-economic goals. The interaction between users and the combined result defines the economic outcome at a particular point in time.
Because they create incentives, institutions may also pose a clear obstacle to economic development. Poorly designed institutions send inaccurate signals to water users about the benefits and costs that accrue to the system as a result of their use and production choices. When individuals respond to a partial or erroneous set of information about the economic consequences of their decisions, the link between individual rational choice and the improvement in overall economic welfare is broken. Incentives are “perverse” and may encourage individuals to use water in ways that reduce overall economic net benefits to the whole. Countries in the former Soviet Bloc, like Poland and the Czech Republic, provide an excellent, but unfortunate, example of how the lack of economic incentives can lead to seriously inefficient use of resources. Certainly, in the absence of resource and product markets, the political or administrative principles that guided how water was allocated between various industries and between industrial, domestic and environmental uses, often led to distributions that were clearly inefficient from a capitalistic perspective. Some institutions incorporated economic incentives, but they could not work properly because the required underlying markets did not exist.

2.4 Equity

As a guiding principle, economic efficiency is powerful, but limited. While institutional change is likely to increase or decrease the aggregate net benefits accruing to a society, it will definitely, and just as fundamentally, change the distribution of those benefits and costs. Because changing the incidence of benefits and costs is inescapable when water institutions change, equity must also be a central element of the evaluation methodology. Quite often, equity and distributional issues are a motivating force behind interest group action. Certainly, fairness issues concerning the distribution of water between agricultural and municipal interests are a common theme in water policy controversies around the world. In affluent countries, the distribution of water use benefits between traditional (consumptive) uses and emerging (often environmental, non-consumptive) uses is frequently at issue. In developing countries, concerns over and attempts to deal with poverty are repeatedly the key equity issue in shifting water laws and policies.

Equity concerns are often at the root of water policy issues where the rights of indigenous peoples are in question. This theme runs across both developed and developing nations. Institutional issues may concern whether these groups have rights to the water or may address the extent of damage to which these groups may be exposed as other groups exercise their water rights. For example, in the United States, the question of Native American water rights has been very controversial and has affected water allocation to a great extent in several parts of the country. The Supreme Court case of Arizona vs. California (373 US 546 (1963)) reaffirmed the Winters’ doctrine, which establishes the water rights of native Americans. Winters vs. United States (207 US 564 (1908)) states that water rights were in fact granted to native Americans when federal reservations were established (thus the name reserved water rights). The great majority of Indian water rights went unexercised for many decades, sometimes for a century. However, they are not lost through non-use, like other water rights in the USA. Now that these rights have begun to be used, they have required very substantial changes in existing rights distributions (displacing a great number of established users) and/or huge compensation packages.

Equity issues surrounding indigenous peoples can also affect water institutions by having an impact on water development policy. For example, in India, the Sardar Sarovar Dam on the
Narmada River has brought serious opposition because it would submerge 37,000 hectares of land and inundate the traditional homeland of thousands of indigenous Indian villagers (http://news.bbc.co.uk/1/hi/special_report/1998/water_week/65961.stm). While the project is intended to bring relief to a drought-prone area of India, it is viewed by many as a large-scale abuse of human rights, bringing damage to many poor and underprivileged communities. Along with environmental concerns, this issue was a factor in the World Bank’s decision to pull out its funding. While this equity issue is recognized widely as a significant concern, it has not altered the final decision on the dam, owing to the weak political power of the affected group.

2.5 Social welfare

In some cases, the overall goal behind institutional change is more fundamental than changing the distribution of benefits and costs. The concern is the distribution of economic, legal and social opportunity (as distinct from economic outcomes) and the redistribution of economic advantage. The socially desired distribution of economic opportunity reflects a collective attitude about the appropriate social welfare function for the society. Certainly, South Africa provides an example of how the overall issue of social welfare can be a critical factor influencing natural resources policy. This has been the case for South Africa since the end of apartheid and democratic elections in 1994. Basic access to water for the entire population, especially those disenfranchised in the apartheid era is a fundamental issue that South Africa is trying to address with changing water institutions (Backeberg, 2005). Balancing social welfare objectives (for example battling against poverty) with other goals (like cost recovery) is a problem facing a great many countries in the developing world.

In the case of water resources, the central social welfare questions usually concern (1) who should have access to water resources and (2) if there should be a total limit on water use from a particular source. In developing countries, concerns about water access are closely tied to poverty issues and overall social welfare. In developed countries, the access of environmental interests to water is a typical social welfare concern. Prior to the 1970s, stakeholders with environmental interests were not even allowed to obtain rights to water, nor compete with other interests. In the 1960s and 1970s the USA experienced a widespread change in the subjective perception of water problems. The environmental movement certainly produced many changes in water institutions. Even more recently, the issue of sustainability (understood here as the access of current and future generations to water) has become a critical social welfare issue in virtually all countries.

The importance of social welfare and the influence of this issue on water institutions are perhaps best illustrated by the very vocal (while perhaps small) international opposition to privatization of water resources (Gleick et al., 2002). In this context, privatization refers to transferring some of the assets or operations of public water systems into private hands. While there is a range of concerns including environmental and equity issues, the main arguments against privatization that point to social welfare concerns are that (1) water provision is (should be) a basic responsibility of government, (2) privatization may bypass underrepresented and underserved communities, (3) privatization agreements often fail to include public participation and contract monitoring, (4) agreements may lack dispute resolution procedures and (5) privatization may be irreversible. (in fact, one or more of these concerns may be unfounded for particular cases of privatization).

The foregoing section provides an explanation of the individual motivations that lead individuals to seek change in water institutions and how the same set of goals can be used to evaluate
potential or actual institutional change from an aggregate viewpoint. The following section turns
to the next level of evaluation at the meso, or middle, level of policymaking. The meso level
corns the actual process of institutional change and the factors that may facilitate or pose
obstacles to innovation.

3. Evaluating institutional change at the meso level

In order to understand better, in practical terms, the evolution of water institutions and their
impact on economic performance and other social goals, it is useful to decompose the overall broad
notion of institutional change into typologies that capture key analytical and functional elements.
At the meso level, institutional change is evaluated in terms of the factors that influence the
structure and sequencing of change.

3.1 Nesting and stages of change

It is valuable to reiterate that when one refers broadly to changes in water institutions, this
means a great variety of possible changes in the types of rules governing water allocation and use. It
is useful to break down the plethora of possible rules into the following categories: (1) water laws,
(2) water policy and (3) water administration. These categories are generally hierarchical, with
changes in water law being the most fundamental overarching type of change. Within broad water
laws, water policies delineate management approaches. Administrative rules relate to appropria-
tion, provision, monitoring and enforcement within the broader set of laws and policies (Saleth &
Dinar, 2004).

For example, in the USA, the fundamental water law governing water quality is the Clean Water
Act. States are required to develop policies to manage water resources in a way that meets the
intent of the law, including the division of responsibilities between various agencies. Finally,
making the law operational requires substantial bureaucracy of water professionals who utilize a
system of administrative rules related to water quality. Recognizing both the breadth and depth of
water institutions is important because it points to the “nestedness” of institutions. The many levels
of water institutions are structurally embedded within themselves (North, 1990). In this way, a
particular rule governing water may be interlinked to a great variety of water rules, linked together
by related institutions at many levels. This interdependent structure is extremely important in terms
of evaluating what kinds of change in water institutions may actually occur and what their impact
on the economic system might be.

If several levels of institutions governing water are uncoordinated or conflicting, serious
problems can arise in allocating water rationally and in making progressive changes in policy.
Analysts in many countries cite fragmentation and uncoordinated policy as a problem in water
institutions. For example, in Australia, multiple states have adopted rules and regulations that
fail to recognize cross-border impacts, resulting in ecological damage and basic incompatibility
in management systems including data collection (McKay, 2005). When the basic forces stimu-
ling change in fact materialize, actual institutional change occurs (if it occurs at all) in a stage-
based process. While one stage is a necessary prerequisite to the subsequent stage, the process may
stop at any point, owing to political, social and economic obstacles. Four fundamental stages
include: (1) changes in the perception of needed institutional change, (2) political articulation of needed changes, (3) steps taken to make changes in water institutions operational and (4) the actual impact of institutional change (Saleth & Dinar, 2004).

The case of Namibia provides an example of how innovation in water institutions can be frustrated at any stage of the process (Heyns, 2005). Since 1997, Namibia has gone through stages one and two of progressive change in water institutions. The need for change has been perceived and politically articulated. Unfortunately, these changes have encountered significant trouble in becoming operational, primarily owing to the lack of staffing power and funding. Even though water reform is based on a sound rationale, efforts to make change a reality and produce a positive impact on the water sector have been frustrated. In the sections that follow, some key concepts that are helpful in evaluating the process of actual change are outlined. These factors may affect one, or more likely, several of the stages of institutional change. Moreover, there is a considerable feedback effect. Obviously, perception of need affects political articulation, which, in turn, may lead to operational changes. In addition, the actual outcome of any institutional change (stage four) will influence social perceptions, which may well lead to another round of reform.

3.2 The role of subjective and objective elements in perception

The perception of needed change in water institutions can result from subjective or objective elements. Two of the most important objective elements are technology and the physical environment. Subjective elements include the values and ideologies of individuals and their development over time. It is easy to envision how changes in objective resource realities can lead to the perception that water institutions need to be changed. For example, in Australia, the objective reality of serious groundwater overdrafts certainly contributed to the perception that collective caps on groundwater extractions were appropriate (Delforce et al., 1990). In many parts of the United States, especially in the Western states, water users have recently experienced three or four years of significant drought. Below normal patterns of precipitation and snow packs have resulted in reservoirs being drawn down to the point of extinction. Owing to the existing set of water laws based on prior appropriation, particular groups of water users are more or less affected by the drought depending on the seniority of the water rights.

Aurora Colorado is a municipality that has been particularly hard hit by the drought and as a result, perceptions are changing about appropriate water policy. Before 2003, Aurora’s efforts to stretch existing supplies relied primarily on voluntary conservation measures. This approach has not been very effective, which is not surprising to economists. As the objective water situation has grown more desperate, the city has turned to water pricing as a policy to reduce demand, a policy that has met with much greater success. The institutional change in this case is in the category of water policy, rather than overall water law. It will be interesting to observe what happens to perception as weather patterns return to normal. It may be that perceptions of pricing needs have been changed irrevocably, owing to the critical nature of the current crisis. On the other hand, in many cases, perceptions of needs evaporate as soon as water patterns return to what is normal. In some cases, objective elements external to the water sector may contribute to the pressure for innovation in water institutions. For example, in Mexico, broader economic realities, particularly debt-relief problems, structural adjustment and the politics of international aid and lending have
been a factor. These elements have been important factors in terms of the growing pressure to liberalize the water sector (Hearne, 2004).

Subjective elements are just as critical to changing perceptions of need for institutional change. Certainly, one of the most dramatic and significant subjective elements influencing a wide range of water institutions is the rise in environmentalism. The “environmental movement” is a perfect illustration of how biases and ideology evolve by people learning (perhaps from each other). Environmentalism is a “collective attitude” that has grown and definitely influences how individuals evaluate the world around them. In New Zealand, it has been observed that the perception of need has evolved continuously from a focus on flooding, to pollution, to irrigation and then to the environment (Saleth & Dinar, 2004). While subjective perception is difficult to measure precisely, it can be estimated via contingent valuation and other techniques, like the Delphi method, that are utilized by economists.

The impact of this subjective view on institutional innovation is widespread. It has led to the broad range of changes including the development of in-stream water rights and proposals to decommission dams (e.g. Hoover Dam) that symbolize past attempts to manage water resources. The role of the subjective element of environmental attitude is not limited to democratic states. This bias was present and is growing in former Soviet Bloc countries. When the communist system collapsed, these biases were transformed into political action and led to substantial innovations in natural resources policy, including those that apply to water resources.

3.3 The pervasiveness of path dependency

In order to evaluate the prospect for reforms in water institutions in a particular country, it is critical to consider the significant role of path dependency. Analytically, path dependency refers to the fact that potential changes in institutions are both constrained and enabled by past institutional configurations. It does not mean that the range of possibilities is not the same across countries. However, it does mean each country will face fairly different obstacles in initiating innovations.

Path dependency is an important factor in explaining the variety of institutional approaches taken in specific countries, as well as very different rates and directions of change. Water institutions are nested. This means they are linked to related (perhaps other natural resource) institutions that are, in turn, structurally embedded within the larger legal and agency structure and indeed within the overall structure of a particular national government. For example, the general economic liberalizations effected by China, Spain and many other countries in recent years have had positive impacts on the potential for liberalizing the water resources sector as well (Saleth & Dinar, 2004).

The impact of path dependency, at the broadest level, is clear for countries (like those in Central Europe), which were part of the former Soviet Bloc. For example, the experience of the Czech Republic, which had a totalitarian regime, as well as its history as part of the Austro-Hungarian Empire, colors the opportunities and obstacles faced at this point in changing water institutions. Because the value of water associated with both fishing and aesthetic beauty were reflected in Austro-Hungarian laws of the 19th century, a historical foundation was established that will facilitate the ability of the Czech government to recognize these values in newly emerging water institutions (Sauer, 2002). In addition, because of the heavy state role in the post-war (world war II)
era, a centrally managed fund for water resources activities may also be less objectionable than in countries with a different experience.

Path dependency resulting from embedded institutions. This means the choice of one institutional component can and usually will affect subsequent institutional arrangements. Another example of path dependency can be seen in the development of water law in the Western United States. Many states in the arid western part of the country utilize the doctrine of “prior appropriation” (first in time is first in right) as the basic principle underlying the water law and the rules of access. This notion was taken directly from mineral laws, which were developed prior to the water law, wherein miners would “stake their claim” to land and would be protected against those who arrived later pursuing the same interest.

The principles applied to the use of surface water have, in turn, influenced innovations in groundwater institutions. Groundwater law is, in general, more primitive than surface water law and usually adheres to the rule of “absolute ownership”, meaning unlimited pumping by those with ownership of overlying lands. However, in cases where groundwater has been found to be connected to surface water (via an alluvial aquifer) innovations have been made to apply the principle of prior appropriation to groundwater as well. In this case, path dependency manifests in grafting the water law of prior appropriation to groundwater despite the considerable difference in the characteristic of the resource.

3.4 Institutional transaction costs

Once the need for institutional change is perceived, the process of innovation requires that new policy alternatives are articulated and eventually implemented. Essentially, in order for innovation to occur, those with the current political power must take advantage of opportunities and provide leadership (Bromley, 1989). In general, the obstacles that must be overcome, in this regard, can be labeled as transaction costs, which have been defined by Williamson (1985, 2) to be “the effort, time and expense necessary to obtain the information necessary to make an exchange, negotiate the exchange and enforce the exchange”. These exchanges are essentially economic contracts. Traditionally, the notion of transaction costs referred to the ease or difficulty with which individual economic agents could operate within a given institutional structure. Certainly, the traditional notion is relevant for many countries. For example, in South Africa, recent reforms allowing trade in water rights became effective only after administrative authorities (the Crocodile River Main Irrigation Board) lowered transaction costs by providing both information and coordination services to farmers who were in a position to sell (Backeberg, 2005).

This powerful concept can also be applied to the transaction costs of modifying existing institutions or creating new institutional arrangements or both. When applied to institutional change in the political, rather than the economic sphere, the costs involved refer to costs perceived by political agents in initiating and effecting reforms. To make matters more complicated, because of path dependency, the transaction costs change as the process occurs. For example, the political transaction costs of moving the reform process to midstream and then returning to the status quo might be far greater than the transaction costs of a full successful reform (see the illustration from Poland below).

Within the political arena, political actors have considerable discretion in terms of the political contracts they choose to support or oppose. For this reason, political leadership is a key element in
evaluating the potential for institutional change. As discretion grows, leadership and commitment to reform become more important. The potential for innovation may be “asset specific”, meaning that the possibilities for action may depend on the specific configuration of political actors and their relationship to each other. Supporting an innovation in water institutions is inherently risky, as any deviation from the status quo will alter the power and economic outcomes. In the extreme, political careers may be at stake. This general principle can be illustrated by an air quality case in Poland. In post-communist Poland, resource policies were undergoing substantial innovations. In 1992, the environmental minister suggested a substantial reduction in air pollution charges (by 30%). Scientists, environmentalists and industries that had already undertaken the investment to cut pollutants, protested. Ultimately, the ministry backed down and raised charges again. This experience was a factor in the environmental minister’s resignation from office in 1993 (Livingston et al., 1995). This example also points to the challenge of balancing beneficial changes in resource policy with vacillation in policy, which can disrupt economic activity.

4. Summary and research implications

In summary, what can be said about evaluating water institutions using the concepts presented? At the micro level, the political economy model can assist in evaluating and understanding the individual stakeholders involved and their diverse motives in seeking or resisting change in water institutions. Just as importantly, the model helps evaluate the political power of various stakeholders and the likelihood that their aims will find political expression.

At the micro level, the model points to how evolving subjective interests and changing objective realities combine to shape the forces for institutional change. At the meso level, the model focuses on the probability that pressure at the micro level will result in actual change. The role of political agents and the structure of institutions in the status quo are critical. Political actors will do their own assessment of the opportunities to be had by supporting or initiating a proposed institutional change, as it compares to the transaction costs that will be incurred. The status quo configuration constrains, to some extent, the range of possible innovations. By the same token, path dependency means that a modest innovation may lay the groundwork for substantial improvements in water institutions in the future. There are virtually unlimited opportunities for additional research in this area for creative economists. The possibilities may be categorized into (1) positive research into the actual cause and effect relationships affecting change in water institutions and (2) normative research into recommendations for strategic change in water institutions in the interest of individual, group or country goals.

Many of the concepts presented here, especially at the meso level, deserve additional positive research. For example, it would be interesting to examine and develop a typology of the types of transaction costs political actors face when they consider the possibility of making a change in water institutions. Path dependency is also an exciting and intriguing topic. In the context of water institutions, the researcher might examine the difference between necessary and sufficient conditions for initiating a particular water institution (like water pricing). At the micro level, research opportunities also exist. For example, there is much to be learned about how subjective perception changes and how it can be measured.
Applied work will also be productive in terms of information generated about model elements. Qualitative research applications could involve comparing model concepts to actual case studies of change in water institutions in specific countries. Quantitative empirical work may also be done building, perhaps, on the work of Saleth & Dinar (2004). Normative research is, by definition, value laden. The research goal changes from describing changes in institutions to designing change in water institutions. If the relevant value is efficiency (only one of several possibilities), it may be appropriate to research into how policymakers can reduce the transaction costs faced by water users when they make transactions (trades), or perhaps more controversially, improve the likelihood that policymakers will hear and respond to groups that support changes coincident with efficiency gains. If the relevant value is the environmental or equity goal of a particular interest group, one might ask how to facilitate interest-group organization and political lobbying in a way that improves the odds of favorable changes in water institutions.

In conclusion, economists have long been able to assess the narrow and specific economic impact of changes in water institutions. However, the relatively new, developing and much broader political economy model of institutional innovation can help generate real insight into additional important aspects of change. The concepts can help economists evaluate both the potential opportunity for beneficial (or detrimental) change and the obstacles that are likely to be encountered. If addressed in a positive way, these concepts can help regions and countries to adapt to changing conditions and design water institutions that can yield real improvement in the use of water resources.

References


