10 Afterword

How Theory, Practice, Politics and Time Affects Views on the Indirect Economic Impact of Water Infrastructure.

John Briscoe

This book has described both how a new generation of analytic tools can be used for examining the direct and indirect benefits of major infrastructure in the developing world and presents results which consistently show that major water projects give rise to very large indirect benefits.

The purpose of this Afterword is to locate this theoretical and empirical work in a historical, political and economic context. It builds on the premise that analytic tools and analytic results do not develop in a vacuum, but that they are deeply affected by issues such as the stage of development, and the governance of the development process. It will be shown that the questions which are asked, and the answers which are accepted, depend on who is doing the asking, when they are asking and who is deciding what answers are acceptable. It will be shown that methods and conclusions which might be appropriate at one period in the historical evolution of a country are inappropriate at other periods in the development process. It will also be shown that whereas these political and contextual questions are of muted importance when there is a self-contained examination within a particular country (where moral hazards are limited) they are of transcendental importance in the development business (where it is usually rich countries defining what is acceptable for poor countries, and where post-development insights are imposed on pre-development contexts).

An instructive point to start our story is in 1955, when there was a heated discussion between the US Bureau of the Budget and the US Congress on the question of indirect benefits of major water

infrastructure. The Congressional Record of these two discussions in 1955 (U.S. Congress, 1955) should be a required reading for all students of the history and political economy of the apparently-neutral tool of cost-benefit analysis!

The hearings were called to review a proposal by the Bureau of the Budget which, inter alia, suggested that indirect benefits should be excluded when evaluating major water infrastructure projects. At the first hearing the proposal was hotly contested by the Committee Chairman and members of the House Committee. (Some of the Chairman's utterances: "I want the gentleman (Director of the Budget Bureau) to have the milk of human kindness in his soul as he looks over the reasons this order was issued" and "Let the Chair suggest to the gentleman that a vicious policy, wherever it originates, should be stopped."). How, the Congress asked, could the government propose to exclude consideration of the indirect benefits, when the major reason why projects like the TVA and Grand Coulee had been built was precisely in order to generate such benefits? The irate Chairman (from California) asked the Director of the Bureau to consider what development in the Western United States would have been if the proposed methodology had been adopted in the developmental stage of US history. "Do you mean to say that the people in your agency set up a document which is to set the standards... And yet you cannot name one single project ever built by the Bureau (of Reclamation) or currently under consideration that would qualify for construction under the standards set in that document?"

In the second hearing, two weeks later, the Secretary of the Interior explained that "a basic purpose of the reclamation (i.e. major water) laws is to spur development in the West". There was, therefore, general agreement that indirect benefits were important. The problem, he further explained, was that "while there is general recognition that such (indirect benefits) are created by the projects, agreement has not been reached as to how such values are properly measured".

The result of the hearings was a substantial revision of the original proposal. As summarised in the standard World Bank book for the Evaluation of Agricultural Projects (Gittinger, 1982) "when market

prices are used in economic analysis, as has been the custom in the US for water resource and other public works, it is necessary to estimate the secondary costs and benefits and then add them to the direct costs and benefits".

Heated though the discussion was, in many ways this debate was of waning practical importance in the United States, because by the 1960s the country had developed the infrastructure platform for its broad-based economic development. The US developed about 5000 cubic meters of water storage capacity per person, with 900 days of storage capacity on the Colorado River, and with about 75 per cent of hydropower potential developed. Most of this infrastructure was explicitly and deliberately designed to provide a platform for broad-based development. Where detailed subsequent assessments of indirect benefits were subsequently undertaken (for example of the Grand Coulee Dam (Ortolano and Cushin, 2003), these confirmed that the indirect effects were, in fact, very large, typically about the same size as the direct impacts of the energy and irrigation services provided.

But what of the developing world, where such questions are far from academic, since, almost by definition, very little of this infrastructure platform had been developed? Compared to the reservoir capacity of 5000 cubic meters per capita in the US, Ethiopia and Kenya can store only 30 cubic meters; compared to the 900 days of storage in the Colorado, Pakistan can store only 30 days of flow on the Indus; compared to the 75 per cent development of hydropower potential in the US, Africa has generated less than 5 per cent, and Asia and Latin America about 30 per cent. In short, what is the import of this debate when it takes place before the water infrastructure platform (Grey and Sadoff, 2007) is in place?

In the 1960s and 1970s there was intensive intellectual effort devoted to defining methodologies for assessing the economic impact of projects in the developing world. A major difference between the case of the United States (the focus of the Bureau of the Budget analysis) and the developing world was that markets were often severely distorted by governments in the developing world. To deal with these price distortions, economists developed methods for using shadow prices

(which reflects the opportunity cost for inputs and intermediate outputs, and willingness to pay for final goods and services). For example, the definitive 1972 UNIDO treatise on cost-benefit analysis (UNIDO, 1972), described a four-stage process:

- Step One: Financial Analysis: calculation of commercial profitability at market prices;
- Step Two: Economic Analysis of Benefits: Calculation of net aggregate consumption benefit at shadow prices
- Step Three: Economic Analysis of Costs: Adjustment of the social value of investment
- Step Four: Other Goals: Addition of benefits deriving from the accomplishment of other national goals such as regional development and income distribution.

Subsequent elaborations (for example Gittinger, 1982) forged a link between the shadow price analysis (Steps 2 and 3) and Step 4, asserting that "Shadow prices that include carefully traced indirect changes in value added include the multiplier effects while minimizing the danger of double counting" and claimed that "most of the multiplier effect is accounted for if we shadow-price at opportunity cost" (Gittinger, 1982). These elaborations cautioned against "estimation of indirect benefits, which is a theoretically difficult process and one easily subject to abuse."

And there, to a substantial degree, is where things stopped, with general practice in development economics being use of shadow prices to estimate inputs and outputs, with indirect effects being ignored both (a) because it was asserted that these would be taken account of through careful shadow pricing and (b) because it was considered methodologically and computationally too difficult to estimate these indirect effects.

Chapter II of this book, co-authored by one of the world's leading practitioners of project cost-benefit analysis, reviews the way in which shadow pricing is actually applied in project analysis. This review casts serious doubts on the claim that using shadow prices actually results in an accurate assessment of costs and benefits. It shows, for the case of irrigated agriculture, that (a) the use of shadow prices for major outputs

either overestimates or underestimates the value-added from the primary processing of agricultural commodities and (b) that conventional cost-benefit analysis usually confines its attention to primary outputs (such as paddy, wheat, cotton, sugarcane), seldom explicitly taking into account secondary forward linkages (such as conversion of wheat into bakery products or oils for hydrogenated oil or sugar into confectionery). The analysis in Chapter II concludes that, in practice, the use of shadow prices seldom captures the indirect or multiplier effects.

The use of shadow pricing methods has tended to fade in recent years as a result of very important changes in the economic landscape in most developing countries. Whereas heavy government intervention was standard in the 1960s, the level of government intervention, and the associated distortions, has fallen fast in most developing countries. Today, prices are generally, as in developed countries, reasonable reflections of the values of the inputs and outputs. This has meant that standard practice in project evaluation has thus converged on the long-standing practice in developed countries, where (as described in Gittinger, 1982) market prices are used directly in cost-benefit analysis. (To illustrate this change, the words "shadow" does not occur in the economic analyses done of the two major recent World Bank financed dam projects, Bujagali in Uganda and Nam Theun 2 in Laos).

Simultaneously computational capacity has improved dramatically, as has the availability of calibrated models of regional and national economies. As shown in the empirical sections of this book, it is now possible, in many settings and at modest cost, to estimate, ex post, the indirect costs and benefits of large projects and, in many cases, estimate which economic groups benefit from these indirect impacts.

A summary of the findings in this book (of indirect benefits of large dams in Egypt, Brazil and India), in other studies (of the Grand Coulee Dam in the United States (Ortolano and Cushin, 2003) and the Muda Irrigation Project in Malaysia (Bell and Devarajan, 1985)) show:

- Methodologies are now available which enable economists to estimate, *ex post*, the indirect effect of major water infrastructure projects and the incidence of these benefits on different groups.

- Indirect impacts are real and large—typically of the same order of magnitude as the direct effects—in the development stages in rich countries and in contemporary developing countries;
- The incidence of benefits is quite different when indirect effects are added to direct effects, with some striking cases (Bhakra in India) where it is the poor, who were not beneficiaries of the direct impacts, who were the major beneficiaries—through the labor market—of the indirect impacts;
- The sources of actual total (direct and indirect) benefits are very different ex post than was predicted ex ante. The most striking case is Aswan, where the logic of the dam was to develop Egyptian agriculture, but where by far the largest direct and indirect benefits have emanated from electricity generation. A deeper point is that a major attribute of multi-purpose dams is to produce major streams of benefits as economies evolve and as societal demands evolve.
- While the number of cases is small, the evidence in this study is that smaller dams (Bunga in India) have, as anticipated, smaller ripple effects and thus smaller indirect effects than large dams (Bhakra in India)
- While the literature is small, there is also evidence (Hazell and Ramasamy, 1991) that the multipliers for infrastructural investments are much larger than for the "social" investments which are currently given highest priority by development agencies.

The second part of this chapter examines how these striking results, confirming the transformative role of large water infrastructure, has been translated into contemporary development policy. One way of understanding this evolution is to tell the story from the perspective of the World Bank, which occupies center-stage in the development community, especially in terms of framing the intellectual debate about development.[1]

1 The author was an active participant in this debate in the World Bank, during his tenure as the Senior Water Advisor at the Bank during the period from 1995 to 2005. A description of the war over infrastructure policy in the Bank during that period has been described in detail in Chapter 13 of Sebastian Mallaby's The World's Banker, the definitive history of the Bank during this period (Sebastian Mallaby, 2004).

To understand how the development community has responded to these results, it is necessary to start with an understanding of the way in which major development institutions are governed, with the World Bank an instructive illustrative example. The World Bank lends to developing countries through two main "windows"—about 75 per cent of lending is done at market rates through the IBRD; about 25 per cent is done through heavily-subsidised rates through IDA to poor countries. One might expect that hard-lending-window thinking (IBRD) would dominate the intellectual landscape in the Bank, both because it is the longest-serving instrument but also because of its numerical dominance. The reality is just the opposite, for reasons described by the author of the official history of the World Bank. In a brilliant analysis, Devesh Kapur (2002) shows how, in recent decades the IDA tail has come to wag the IBRD dog. The roots of this paradox are a contrast in the politics of raising capital. Raising capital for the IBRD window is a quiet and largely invisible process of issuing bonds, and selling these to long-term institutional investors. By contrast, raising capital for IDA is a highly-political, permanent process in which the World Bank goes around to the capitals of the rich world with cap in hand. As with all charitable transactions, he who pays the piper calls the tune. In this case rich countries use the leverage of IDA to impose the view of their constituents who are interested in development on the World Bank. Central to this process is the rapid increase in activism by rich country NGOs who have either a charitable, paternalistic view of development or a profoundly anti-capitalist view of the development process. As described in Sebastian Mallaby's (2004: 8) seminal description of the recent history of the World Bank, rich-country NGOs have come to exert a huge influence on the development policies of their governments, and have often had a fundamental aim of re-shaping the World Bank to conform to their image of development. And what is this vision? In many ways it could be described as leaping directly from poverty to a welfare state, without the intermediate step of developing a productive economy. The Millennium Development Goals (MDGs) are the perfect articulation of this view—they prioritise services such as health, education, basic water and sanitation—but say nothing about the economic processes which have underpinned the development of

such services in now-rich countries. The MDGs are quiet on the fundamentals of economic growth—on the investment climate, and on investments in critical institutional and physical infrastructure for agriculture, transport, energy and water resources.

The ironies in this process are astounding. The NGOs incessantly complain that "the developing world is not adequately represented in institutions like the World Bank" and incessantly complain about "the World Bank imposing conditionality on developing countries". Yet they specifically target instruments like IDA, where the developing world has no voice, to impose extreme conditions which the developing country members of the World Bank would never voluntarily accept. They focus exclusively and heavily on "sins of commission" ("was anyone adversely affected by this process?") and ignore the sins of omission ("how many people were harmed by not doing this project"?)

The recent debate over large dams at the World Bank provides an illustration of how this works in practice. In the early 2000s the staff of the World Bank advocated, for the first time in decades, that the Bank again finance politically-incorrect large dams. A major World Bank consultative process (World Bank, 2002) elicited views on the Bank's proposed re-engagement with "high-risk, high-reward" water infrastructure from different groups of "stakeholders". There was strong support for Bank engagement across the spectrum in developing countries – from governments, the private sector, academics and most NGOs. But there was strident opposition from rich country NGOs whose views were, strikingly, very close to those of representatives of rich country aid agencies. These divergences were not hidden but highlighted, in particular to the developing country members of the Board of the World Bank.

The debate at the Board was, for once, dominated by India, China, Brazil, and African countries, who strongly supported this policy change. The Executive Directors for the rich countries were uncharacteristically reticent in the face of the concerted and strongly-felt views of the developing country owners of the Bank. But the matter did not rest there, but descended to the subtle blackmailing which characterizes the formulation of development policy. As the World Bank Vice President in

charge of this process returned to his office from the first of these exchanges at the Board, the representative of one of the major rich-country owners of the Bank, who had not said a word at the meeting, was on the phone. "If this is the position taken by the Bank, then you must realize that this will put our contribution to IDA in question." This is the way in which the IDA tail comes to wag the IBRD dog!

Sebastian Mallaby has described (Sebastian Mallaby, 2004) the toxic effects of this reality on the World Bank and the broader process of development. Jim Wolfensohn assumed the Presidency of the World Bank at the height of the red-green NGO onslaught on the Bank. One of the first issues he faced was a decision on Bank support for a medium-sized run-of the-river hydropower project (Arun) in Nepal. The project was assailed by the "there is no such thing as a good dam" NGOs. Wolfensohn had strong links with these NGOs and wanted to buy peace with these critics (and their rich country supporters on the Board of the Bank). Within the Bank there was a line of reasoning which said that the project was "too big" for the economy of Nepal (ignoring the fact that neighboring Bhutan, a fraction of the size of Nepal, had blossomed as a result of much larger-scale hydropower development). Using this fig leaf of economic analysis, Wolfensohn's first major symbolic act as President of the World Bank was to withdraw Bank support for the Arun project.

With Wolfensohn's support, the Bank subsequently joined with the IUCN to launch what was intended to be a broad-based multi-stakeholder effort to define new standards for the construction of large dams. What happened was that the World Commission on Dams (WCD) was hijacked by the anti-dam NGOs "who have no off switch" (Sebastian Mallaby, 2004). In a remarkable, gloating piece (McCully, 2005), the NGO leader of this capture described in detail, for the benefit of other such efforts in the future, how the radical NGOs had no intention of compromise, how they were able to ensure that developing country governments had no voice, how they were able to blackmail moderate NGOs and how they now intended to shove these standards down the throats of developing country governments who the NGOs had effectively excluded from the WCD process. A central analytic decision implicit in the WCD report was that only direct impacts of

large dams should be counted as benefits. The final WCD report prescribed guidelines which would, if followed, mean that no large dam could ever be built again.

To every reaction there is, eventually, a reaction. When the Board of the World Bank considered the WCD report, there was vociferous opposition from many developing countries to the Bank adopting the impractical WCD guidelines. From the perspective of this chapter, it is relevant to note that an important element was the perception of how indirect benefits were dealt with in the report of the WCD. Just as there had been deep disquiet in the 1950s in the US Congress about OMB's proposal to exclude indirect benefits, so too there was now disquiet among developing countries about the application of the "indirect effects do not count" philosophy in developing countries. Developing countries noted, repeatedly, that major water infrastructure had been a platform for the development of most now-rich countries, and that the major emerging developing countries—India, China, Turkey, Brazil—had all invested heavily in major infrastructure. Developing countries "with choices" (such as India, China, Turkey and Brazil) were unequivocal that they would continue to build major water infrastructure. Developing countries "without choices", who depend on the goodwill of the World Bank and other development partners, insisted that it was immoral for rich countries who had such infrastructure deny them the right to develop.

The unwillingness of the developing countries to have their voice stifled (led by the "countries with choices") set the stage for a new World Bank policy which emphasised that institutional reforms were necessary but that, so too was major water infrastructure (World Bank, 2003). The increasingly self-confident developing country members of the Board of the World Bank, led by India and China, insisted—successfully—that major infrastructure was essential for development, and that the World Bank must re-engage across the board. As described by the Chinese Executive Director, the debate had not just been about dams and infrastructure, but had changed the de facto governance of the World Bank (Sebastian Mallaby, 2004). This was a historic turning point, in which increasingly-independent, powerful and confident developing countries were no longer willing to be objects of recipes

decided by rich country NGOs and governments who did not have to live with the consequence of their decisions.

This re-thinking of the role of infrastructure in development—of which the current book constitutes an important part—and the re-calibration of governance structures in major multilateral institutions has had a major practical impact. Over the last five years infrastructure in general and water infrastructure in particular, has again become a legitimate area for engagement by the World Bank (and the regional development banks). Just as Jim Wolfensohn's early decision to drop Arun was highly symbolic, so too was his declaration, mid-way through his presidency that "it is important that we have a balance between the Berkeley mafia and the Chadians...and I, for my part, am more interested in the Chadians" (Sebastian Mallaby, 2004). Fittingly the focus of Wolfensohn's last Board meeting was the approval of another controversial dam—the Nam Theun 2 project in Laos. The two following Presidents of the World Bank, Paul Wolfowitz and Robert Zoellick, have both strongly supported Bank engagement in major water and other infrastructure.

References

Bell, C. and S. Devarajan (1985). Social Cost-Benefit Analysis in a Semi-Input-Output Framework: An Application to the Muda Irrigation Project, in G.Pyatt and J.I. Round eds., Social Accounting Matrices: A Basis for Planning, Washington, D.C: The World Bank.

Gittinger, J. Price (1982). The Economic Analysis of Agricultural Projects. Washington, DC: The World Bank.

Grey, D. and C. Sadoff (2007). Sink or Swim: Water Security for Growth and Development. Water Policy 9, 2007, pp.514-527.

Hazell, Peter B.R. and C. Ramasamy (1991). The Green Revolution Reconsidered: The Impact of High-Yielding Rice Varieties in South India, Baltimore, MD: The Johns Hopkins University Press.

Kapur, Devesh (2002). Do as I say, not as I do. Washington DC: Center for Global Development Working Paper 16, 41 pages, October.

McCully, Patrick (2005). The use of a trilateral network: An activist's perspective on the Formation of the World Commission on Dams, American University International Law Review, 16, 1453-1475, 2005.

Ortolano, L and K. K. Cushin (2003). Grand Coulee Dam and the Columbia River Basin. World Commission on Dams.

Sebastian Mallaby (2004). Back to the Future (Chapter 13, pp 336-373), in The World's Banker, Penguin Press.

UNIDO (1972). Guidelines for Project Evaluation. New York: United Nations Industrial Development Organisations.

U.S.Congress (1955). Discussion of Budget Bureau Circular A-47 and the Related Power Partnership Principle, Hearings before the Committee of Interior and Insular Affairs, United States Congress, March 15 and 30, 96 pages.

World Bank (2003). *Water Resources Sector Strategy, Strategic Directions for World Bank Engagement*. Washington DC.

World Bank (2002). External views on the World Bank Group's Draft Water Resources Sector Strategy: "How they were elicited, what they are, and how they will be addressed", August 2002, 24 pages.

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