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Reflections on Private Water Supply: Agency and Equity Issues

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In the years since we first wrote about the proper means and considerable benefits of water privatization, it is fair to say that private provision of water has expanded worldwide, and that private firms have generally—though not always—performed satisfactorily and even outperformed public enterprises with respect to price and service quality. And yet, the idea of water privatization continues to provoke considerable opposition, chiefly on the grounds of “equity” or fairness. In this brief note, we summarize what has happened in the industry since initial publication of the previous article, expand upon our discussion of potential stumbling blocks to successful privatization, offer suggestions for improvements in the contracting process, and address the “fairness” concerns often raised by opponents of privatization.

Recent Developments

In 1999, just five percent of the world’s population was served by private water suppliers. That share rose to ten percent by 2006 and 12 percent by 2010, and one authoritative source forecasts that by 2025 about a fifth of the world’s population will obtain their water from private firms.¹

The industry is dynamic and increasingly competitive. A decade ago, it was somewhat concentrated, with 73 percent of all customers of private water providers served by one of five large firms: France’s Veolia Environnement, Suez Environnement, Société d’Aménagement Urbain et Rural (SAUR), Germany’s RWE, and Spain’s Aguas de Barcelona (which is indirectly controlled by Suez). Remarkably, however, by 2010 the collective market share of these firms had fallen to 32 percent, as the market’s rapid expansion accommodated several additional global players (such as Italy’s ACEA, Spain’s FCC, and Singapore’s SembCorp) and many regional ones.

Growth has been especially significant in developing countries, boosted by World Bank policy that, in many cases,

made aid and access to credit contingent on a government’s willingness to open the water supply market to competition from private enterprises.² Between 1991 and 2009, World Bank-aided investments in privately-owned or -managed water systems totaled \$60.6 billion (undiscounted), the great majority of which went to East Asia and the Pacific (49 percent) and Latin America (39 percent).

This process has not always gone smoothly. Starting in the late ’90s, several high-profile private water supply contracts in Latin America were terminated unilaterally by governments.³ The largest of these were in Argentina—Veolia’s contract in Tucuman was ended in 1997 and Enron’s in Buenos Aires in 2002, affecting 3.6 million customers. But the case most cited by anti-privatization voices involved Bechtel’s contract in Cochabamba, Bolivia’s third largest city. With deteriorating government-run water utilities, many poor people paying high prices for impure water sold off trucks and handcarts, and a national government unable (amid a hyperinflation) to borrow to fund needed capital improvements, the World Bank saw Cochabamba and La Paz (Bolivia’s administrative capital) as excellent candidates for water privatization.⁴

Results were acceptable in La Paz but disastrous in Cochabamba, where there was only a single bidder and the contract stipulated a supra-competitive (15 percent) real annual return on investment. In addition, the firm promised to retire the previous city-owned utility’s accumulated debt while it rebuilt and expanded the existing system—even as it faced political opposition to its plans to increase supply with wells and a dam project. When rates shot up 38 percent,⁵ “Water Wars” broke out, with general strikes and oft-violent demonstrations. In April, 2000, the company’s executives fled Cochabamba and the system reverted to municipal control—a somewhat pyrrhic victory, since for years after it was unable to provide service to half the city’s residents, and only intermittent service to the rest. Nevertheless, the episode is widely

1. Much of the data contained in this section is from David Lloyd Owen, *Pinsent Masons Water Yearbook 2010-2011*, 12th ed. (London, UK: Pinsent Masons LLP, 2010).

2. See International Bank for Reconstruction and Development, *Water Resources Sector Strategy: Strategic Directions for World Bank Engagement* (Washington, DC: The World Bank, 2004).

3. In addition, it is fair to say that concession and lease contracts have been of shorter duration in recent years, and that larger international companies are giving way to smaller, more local firms in public-private partnerships. See Aileen Anderson and Jan G. Janssens, “Emerging PPP Trends in the Water and Sanitation Sector,” Building Part-

nerships for Development in Water and Sanitation (April 2011): 16 pp., available at: www.bpdws.org.

4. See World Bank Operations Evaluation Department, “Bolivia Water Management: A Tale of Three Cities,” *Précis* 222 (Spring 2002): 1-4. A third Bolivian city, Santa Cruz de la Sierra, received World Bank funds to enhance service provided by its successful consumer cooperative.

5. By contrast, bidding for the concession contract in La Paz was more competitive, average rates were increased before the contractor’s assumption of operation, and the rate schedule was designed so that one third of customers actually paid lower prices.

celebrated on the Left, and privatization in Latin America slowed considerably in its aftermath.

In the United States, 24,000 municipally-owned and -managed enterprises dominate the water supply industry, serving about 80 percent of the population; the rest are served by 6,000 private systems. Most suppliers are very small, though many are owned by holding companies; the largest is American Water Works (a subsidiary of RWE), which serves almost 900 localities that average about 8,500 customers.⁶

The pace of privatization of U.S. water supply has been erratic. Thanks to a 1997 executive order that encouraged public-private partnerships, the number of publicly owned systems operated by private companies under long-term contracts increased from about 400 to 1,100 by 2003. In that year, however, the city of Atlanta terminated its 20-year concession contract with United Water (UW)—at the time, the largest and longest privatization of infrastructure in U.S. history—after only four years, citing poor performance.⁷ The high-profile case dealt a blow to private suppliers in other areas. The industry has revived in recent years, however, with pending privatizations in markets affecting over 11 million customers.⁸ The impetus for increased interest in private ownership or management of water systems comes from three main sources: (1) local budgetary pressures related to the recession; (2) aged, decaying systems; and (3) capital spending requirements that could reach \$1 trillion over the next 20 years, much of it mandated by federal regulations related to clean drinking water and wastewater treatment. Nevertheless, these plans face considerable opposition.

Atlanta's experience is instructive. The city had hoped that its contract with UW (a Suez subsidiary) would reduce its annual operating costs from \$42 million to \$22 million and planned to apply the savings to capital improvements needed to bring it into compliance with federal environmental codes. When it ended the relationship, the city claimed that UW had failed to maintain quality (and, indeed, Atlantans had coped with several "boil only" service warnings) or deliver promised savings. For its part, UW claimed the city had misrepresented the underlying problems with facilities (some of which dated to 1875) and that significant cost and quality improvements had been realized by the time the

contract was terminated.

There are a number of important lessons from this experience. First, both sides in a concession contract must perform effective due diligence. Second, contract terms must be carefully specified and focus on measurable outcomes rather than inputs. Third, long-lived contracts are potentially problematic (Atlanta's was the first under new legislation that allowed a term longer than the norm of three to five years). And fourth, and perhaps most important, good communication between parties can salvage a contractual relationship—while bad communication is almost sure to sink it.⁹

Notwithstanding such highly publicized failures as Cochabamba and Atlanta, the great majority of private management contracts have been successful. In the U.S., only 10 percent of cities that have privatized in this way have later returned water to public ownership—and the comparable figure worldwide is generally about eight percent.¹⁰ The efficiencies promised by economic theory have apparently been achieved in the great majority of cases.

Recent scholarship provides copious evidence of these efficiencies. For example, one survey of U.S. systems found operating costs savings ranging from ten to 40 percent in sampled facilities. Perhaps more importantly, prior to privatization over two-fifths of facilities were out of compliance with federal clean drinking water standards, while one year after entering into a public-private partnership, all were in compliance.¹¹

Given the rapid growth of privatization in the developing world, studies of performance there are especially interesting. Effects in Colombia, for example, have been mixed: researchers have found evidence of improved water quality, increased frequency of service in urban areas, and positive effects on health in both urban and rural areas, but negative effects on access to water in some rural areas.¹² Despite its unpopularity in Argentina, privatization there led to significant reductions in deaths from infectious and parasitic diseases; as a result, child mortality fell an average of eight percent in privatized areas and 26 percent in the poorest areas.¹³ A study of 39 African countries over 1986-2010 also found significant improvements in child health in areas with private-sector participation in water supply, with the greatest benefits in the poorest areas.¹⁴

6. Owen, *op. cit.*, pp. 195-201.

7. See Douglas Jehl, "As Cities Move to Privatize Water, Atlanta Steps Back," *New York Times* (February 10, 2003), available at: <http://www.nytimes.com/2003/02/10/us/as-cities-move-to-privatize-water-atlanta-steps-back.html?src=pm>.

8. See Food & Water Watch, "Trends in Water Privatization: The Post-Recession Economy and the Fight for Public Water in the United States" (November 2010), available at: <http://documents.foodandwaterwatch.org/PrivatizationTrendsFactSheet.pdf>.

9. See Geoffrey F. Segal, "Water Privatization: Learning from Atlanta," *Privatization Watch* 28 (2004): 2, 14. For a comprehensive treatment of the "do's and don'ts" of privatization see Steve H. Hanke (ed.), *Privatization and Development* (San Francisco: Institute for Contemporary Studies, 1987).

10. Segal, *op. cit.*, p. 14; Owen, *op. cit.*, p. 23.

11. National Association of Water Companies, *NAWC Privatization Study: A Survey of the Use of Public-Private Partnerships in the Drinking Water Utility Sector* (Washington, D.C.: National Association of Water Companies, 1999), p. 39.

12. Felipe Barrera-Osorio, Mauricio Olivera, and Carlos Ospino, "Does Society Win or Lose as a Result of Privatization? The Case of Water Sector Privatization in Colombia," *Economica* 76 (October 2009): 649-74. See also Philippe Marin, *Public-Private Partnerships for Urban Water Utilities: A Review of Experiences in Developing Countries* (Washington, DC: The World Bank, 2009).

13. Sebastian Galiani, Paul Gertler, and Ernesto Schargrodsky, "Water for Life: The Impact of the Privatization of Water Services on Child Mortality," in *Health Care Systems in Developing and Transition Countries: The Role of Research Evidence*, Diana Pinto Masis and Peter C. Smith, eds. (Cheltenham, UK and Northampton, MA: Edward Elgar, 2009), 259-93.

14. Katrina Kosec, "The Child Health Implications of Privatizing the Urban Water Supply in Africa," Stanford University, Graduate School of Business Working Paper (June 3, 2011), 50 pp.

And Thailand's first privatization, in 1998, produced significant improvement in access, with higher monthly charges associated with higher water quality and service.¹⁵

The odds are good, then, that privatization of water supply will deliver sizeable economic, environmental, and public health benefits in developed and developing countries alike. The question is how those odds can be improved further.

Agency Problems

Whenever some people ("agents") are hired to look after the interests of others ("principals"), inefficiencies can arise from the misalignment of agents' interests with those of principals and from the costs of monitoring the agents.¹⁶ There is, of course, strong reason to believe that these problems will be greater in public enterprises than in private ones (in which incentives for efficiency can be stronger and more adaptable) and ample empirical evidence supporting this belief. That is why government-owned and -managed enterprises are uncommon in many naturally monopolistic markets and becoming less prevalent in water supply. There seems to be a broad understanding (at least in the U.S.) that a private firm is likely to be more efficient than a public one, with regulation of rates commonly imposed to constrain possible monopolistic behavior by that firm.¹⁷

Such regulation involves multi-layered agency problems. If voters/consumers are the principals, there are questions about how well their agents (whether elected officials or regulators holding positions in the bureaucracy) will serve their interests *and* how well the subject firms will serve those of the regulators.¹⁸ Since the previous article was written, economists have made progress designing new "incentive-compatible" rate regulation schemes aimed at reducing the inefficiency likely in such cases. The unresolved empirical question—which we raised in our earlier paper—is whether these regulatory modes, in combination with private ownership of the subject utilities, might be able to match the performance of franchises and concessions regulated, instead, by "competition for the market."

A bit of evidence on this score has come from the Thatcher-era water privatizations in England and Wales. Following the 1989 sale of the public systems in these areas, the firms were subjected to a form of rate regulation—known as "price

caps"—that policymakers hoped would eliminate some of the perverse incentives inherent in traditional "cost plus" or rate-of-return regulation.¹⁹ Unfortunately, this regulatory regime initially failed to produce gains in total factor productivity, and because water prices rose faster than input costs over the next decade, the private firms banked supra-normal profits.²⁰ An adjustment to the price cap formula, however, eventually enhanced technical efficiency.²¹ What is unknown is whether privatization that incorporated franchise bidding might have improved performance more quickly or substantially. More study of this issue is needed.

What is clear from the broader historical record is that there are some steps that can enhance the performance of franchises or concessions operating under contract and not subject to standard rate regulation.

First and perhaps most important, both sides of the trading relationship need adequate time to eliminate the information asymmetry likely to exist when they begin to design their initial contract. In both Cochabamba and Atlanta, the municipalities knew far more about the dire physical and financial conditions of the assets that would be put under private management. The private firms' haste to conclude these negotiations meant that they were saddled with large and unanticipated costs that greatly reduced their chances of fulfilling the contracts successfully.

The information asymmetry can also be mitigated by including those with local knowledge of political and economic conditions in the process of specifying the contract. In Cochabamba, for example, executives lacked information about how some of the political constraints they faced would affect rates, and how the rate increases they ultimately imposed would be perceived locally. In La Paz, by contrast, the firm got the municipality to build some needed (long-deferred) capital investments into the rate base before taking over management, thus avoiding being "scapegoated" politically.

Of course, even if both sides are equipped with reasonably full information about the circumstances of a particular privatization, it is possible that poor contract specification, monitoring, or enforcement will doom the arrangement to failure. In consequence, it is extremely important to "professionalize" these processes. It is no coincidence that the leading private water companies in the world are French and few

15. Saeed Zaki and A. T. M. Nurul Amin, "Does Basic Services Privatisation Benefit the Urban Poor? Some Evidence from Water Supply Privatisation in Thailand," *Urban Studies* 46 (October 2009): 2301-27.

16. For an excellent discussion of agency problems and ways to align incentives within firms, see R. Preston McAfee, *Competitive Solutions: The Strategist's Toolkit* (Princeton, NJ: Princeton University Press, 2002): 188-202.

17. See Clifford Winston, *Government Failure versus Market Failure: Microeconomic Policy Research and Government Performance* (Washington, D.C.: AEI-Brookings Joint Center for Regulatory Studies, 2006).

18. For a treatment of agency problems and how they contribute to government failure see William A. Niskanen, *Reflections of a Political Economist* (Washington, D.C.: Cato Institute, 2008): pp. 221-227.

19. Price caps tie future rate increases to an inflation index minus some target amount of productivity growth; if the firm improves productivity by more than this target, it gets to keep the gains. See Stephen J.K. Walters, *Enterprise, Government, and the Public* (New York: McGraw-Hill, 1993): 388-93.

20. D. Saal and D. Parker, "Productivity and Price Performance in the Privatized Water and Sewerage Companies of England and Wales," *Journal of Regulatory Economics* 20 (2001): 61-90.

21. Fabrizio Erbetta and Martin Cave, "Regulation and Efficiency Incentives: Evidence from the England and Wales Water and Sewerage Industry," *Review of Network Economics* 6 (December 2007): 425-52.

problems arise in their performance. In France, the competence level of the bureaucracy representing the interests of consumers is very high; qualifications are strict and compensation is generous²² (which can, of course, be a mixed blessing from taxpayers' point of view).

In areas where such intellectual infrastructure is not in place, it may be possible to privatize contract monitoring and enforcement. A law or accounting firm, for example, could be retained to audit the franchisee and confirm that the terms of the contract have been observed. To ensure that the auditor has the appropriate incentive to monitor compliance closely, the contract might include a "bounty" that would be payable to the auditor in the event non-compliance is proved.²³

Clearly, designing optimal contracts involves trade-offs. Adding detailed specifications about behavior or results might enable the interests of principals and agents to be better aligned, but such contracts will be costly to negotiate and can make enforcement more complicated—and there can be no guarantees that opportunistic actors will never find loopholes. The perfect contract has yet to be written. The probability that a contract will achieve its intended goals can nonetheless be enhanced if its authors (a) avoid providing incentives to do what is merely measurable rather than what is important; (b) provide the strongest incentives to do the most important tasks; (c) remember that unverifiable contract terms are unenforceable; and (d) understand that readily observable terms can be useful even if they are not ideal.²⁴

But even if all the foregoing issues were always successfully addressed, and privately owned or managed water suppliers operated with maximum efficiency—that is, with costs and prices lower and service quality higher than in public enterprises—some critics would continue to insist that private water supply is socially undesirable. Many of these privatization critics argue that water is not an economic commodity but rather a "social good," and that equity or fairness dictates that it should be supplied free, at least to the poor. It is to this issue we now turn.

Equity Concerns

It is a cliché that there's no free lunch. We can, of course, set a zero price for lunch and put others on the hook for its production costs, but economists warn that that's a bad idea for a variety of reasons. First and foremost, when price is set at zero, we overconsume. We eat until there is zero incremen-

tal value in another bite, which means we take bites that we value less than the actual cost of what we are eating—and so we waste resources.

What's more, overindulging at the lunch buffet might make just *you* fat, but excessive consumption in the water market can have dire environmental consequences for *others*, as well. Groundwater, for example, sustains rivers, lakes, and wetlands. Depleting it through overpumping not only harms plants and wildlife in those ecosystems, but in populated areas can cause subsidence that exposes residents to greater flood risk (as in New Orleans and San Jose²⁵). Thus, given rising populations and limited supplies of fresh water, environmentalists have joined economists in advocating reliance on the price system both to signal consumers that they should conserve water and to ration it to its highest-valued uses. Even the Vatican is on board, noting at the 2006 World Water Forum that "[g]ood management of natural resources is clearly coupled with the requirement that users pay the true cost of services. It has been substantiated that when water is subsidized it tends to be wasted."²⁶

Secondly, there is no assurance that making someone other than the user pay for a good is equitable. It is widely supposed that transferring wealth, income, or economic goods from rich to poor enhances what economists refer to as "vertical equity." The key question is how the benefits and costs of zero-price water in any particular municipality or country are distributed.

This will depend on both the composition of demand for water and the type of tax system the local or national government uses to finance its public provision. If we declare that water is a basic necessity to which everyone has a "human right" and decline to meter and charge for its use (or simply charge prices below marginal costs), it is conceivable that those with higher incomes may—as they use copious amounts of "free" or subsidized water for their lawns or swimming pools, for example—benefit proportionately more than those with low incomes.

And if the costs of supplying subsidized water are defrayed by regressive tax systems, greater inequity may result. Value-added or sales taxes (depending on how they are levied, of course) often impose larger relative burdens on those with lower incomes. But even payroll, income, or corporate profits taxes may have adverse effects on employment levels or prices paid for consumer goods by those of modest means. Unless taxes are levied exclusively on

22. See "French Bureaucracy the Most Expensive in Europe" (November 15, 2007), available at: http://www.french-property.com/news/french_life/france_administration_costs/.

23. Steve H. Hanke, "Privatization at the State and Local Level: Comment" in *Privatization and State-Owned Enterprises*, Paul W. MacAvoy, W. T. Stanbury, George Yarrow and Richard J. Zeckhauser, eds. (Norwell, MA: Kluwer Academic Publishers, 1989), pp. 195-202.

24. For more on contract design and verification issues, see McAfee, *op. cit.*, pp. 366-77.

25. See U.S. Geological Survey, "Land Subsidence in the United States," USGS Fact Sheet-165-00 (December 2000).

26. Pontifical Council for Justice and Peace, "Water, an Essential Element for Life," A Contribution of the Holy See to the Fourth World Water Forum (March 2006), available at: http://www.vatican.va/roman_curia/pontifical_councils/justpeace/documents/rc_pc_justpeace_doc_20060322_mexico-water_en.html.

pure rents—a system as rare as a unicorn—there will be deadweight welfare losses in the markets taxed. These losses will be greater, of course, if the public water system that the taxes support is inefficient. That these effects may be indirect and thus hidden from view does not make them inconsequential; those for whom “free water!” is a mantra need to take careful account of these facts when they enter the debate about water privatization.

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