

# **Can Private Water Companies Deliver Quality?: The Role of Scale and Customer Attentiveness**

## **ABSTRACT**

We compare the performance of private versus public water systems in terms of their compliance with water quality and treatment technique standards. We present a simple theoretical model of multi-task effort allocation and heterogeneous response to information induced external institutional pressures by firms under alternative ownership structures. Our dataset covers 52,011 municipal water systems in the U.S., with more than 200,000 observations over the period 2010-2013. Empirical estimation is conducted using a number of different specifications of violations by private and public water systems. Private systems are found to underperform public systems both in terms of procedural and outcome compliance, with private systems performing particularly poorly in procedural compliance. Performance effects are moderated by system size, however. Private systems' likelihood of being in compliance on outcomes and on procedures improves with size, and may outperform public systems at large scale.

## **SUMMARY**

Businesses and industry associations around the globe are recognizing the fundamental challenges that growing pressures on water resources present (2030 Water Resource Group, 2009; CDP and Deloitte, 2011; KPMG, 2012). Yet, despite this growing attention, management scholarship has lagged behind in studying the business implications of a water-constrained world, and the stakeholder and institutional forces that businesses face around water (Kurland & Zell, 2010). Moreover, there is little research exploring how alternative approaches to managing water, e.g. public vs. private ownership, perform. The need to understand these alternatives is especially urgent in light of recent conflicts over water in Detroit and Ireland. In the summer and fall of 2014, protests erupted in Detroit over the 30,000 household water shutoffs by the city's water department, with banners and chants repeating "Who's Water? Our Water" and "Who's on our side? United Nations. Who's on their side? Corporations."<sup>1</sup>

Whether crucial social systems such as education, electricity, natural gas, health care, telecommunications, and water---which are fundamental to our quality of life or even to life itself---should be provided by public or private entities has long been an issue of heated debate, and there has been much research on this topic. Masten (2010) points out that water and sewage systems are an anomaly in the U.S., in that they have traditionally been publicly owned while other utilities have long been privatized. Water supply has emerged into the spotlight following the Great Recession as many municipal governments, especially in the Rust Belt, considered selling off their water systems to cope with fiscal challenges (Food & Water Watch, 2010).

Privatization advocates argue that market forces provide discipline that leads to lower costs and more efficient service. However, water privatization often faces strong popular opposition from concerned social activist groups. Reports by Food & Water Watch maintain that privatization amounts to a very expensive loan that will result in higher water rates and lower

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<sup>1</sup> From the authors' own field observations and data collection.

quality of service. They provide a shocking number that privatization adds 64 percent or \$153 per annum, onto the water bill of a typical New Jersey household. They also reveal that private companies have served contaminated water and sold out land used to protect water supplies. The nonprofit organization Clean Water for North Carolina issued a report on the quick privatization of aging, small water systems by Aqua North Carolina and Utilities Inc., raising severe concerns surrounding quality deterioration and rise in living expenses for low-income, minority, and rural consumers. The controversy surrounding Detroit's water shutoffs in 2014 is but one facet of these political battles.<sup>2</sup> In England, Ireland, and Wales, when Thatcher's government privatized the 10 regional water authorities in 1989, similar controversies arose and the results have been decidedly mixed. For example, Saal & Parker (2000) find that the privatization produced no measurable efficiency improvements.

Most of the existing literature on privatization has taken a cost-benefit perspective focusing on cost, pricing and efficiency. Scant attention has been paid to the issue of quality of service, in particular, compliance with quality standards among water systems of different ownership statuses. In this paper we aim to fill that gap by studying the relative performance of public and private water systems with respect to violations of EPA's Safe Drinking Water Act (SDWA). We develop a simple model inspired by the economics, finance, and strategy literatures to explain the effect of privatization, taking into account government monitoring behavior, the presence of consumers with limited attention, firms' heterogeneous response to information induced external institutional pressures, and compliance with procedural and goal standards. We then use data taken primarily from EPA's Safe Drinking Water Information System (SDWIS) to identify the relationship between different kinds of SDWA violations and ownership statuses, size, the proportion of attentive consumers, and a series of other moderators. Our findings suggest that private systems generally perform more poorly than public systems, both in terms of pollution outcomes and, even more markedly, procedural compliance with regulation, but that this underperformance gradually disappears with scale.

These findings offer valuable implications for future privatization policy. They suggest strongly that we should not only consider the efficiency side of privatization, but also give the quality effects serious attention. In particular, regulators should bear in mind the tendency for small private systems to underperform when crafting policies to monitor and improve water system performance, and the potential for large private systems to outperform public ones.

Obviously, one needs to keep in mind that the limitations of our empirical strategy undermines our ability of making a strong causality argument regarding how privatization or municipalization of water systems affects performance. Nevertheless, we are hoping that our results have provided some insights on this issue to inspire further research. Actually, a twin paper we are working on right now is set to directly estimate the effect of privatization and municipalization of water systems on their compliance performance. Using our two major empirical strategies of propensity score matching and weighted difference-in-differences, we find that privatization leads to lower compliance levels whereas municipalization leads to higher compliance levels, but the latter effect is small and only marginally significant. These are the first empirical results using a dynamic panel of water systems that change ownership status, and they have important implications for privatization policy.

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<sup>2</sup> News link: The Guardian: "Detroit's Water War: a tap shut-off that could impact 300,000 people" Jun 25, 2014 <http://www.theguardian.com/environment/true-north/2014/jun/25/detroits-water-war-a-tap-shut-off-that-could-impact-300000-people>