"Pricing Water"

or

How to make public utilities self-sustained,

consumers responsible and account for essential needs?

Étienne Billette de Villemeur
Université de Lille and ÉQUIPPE

Justin Leroux
HEC Montréal, CIRANO and CIRPÉE

ROUGH DRAFT

Abstract

We develop a framework to formally take matters of partial responsibility into account when devising rates for utility services. We characterize two polar opposite rate-setting solutions. The Conditionally Egalitarian Solution emphasizes responsibility for excessive usage while the Egalitarian Equivalent Solution stresses compensation for differences in needs.

Within these two solutions, we provide characterizations of several underlying cost-sharing rules to govern the management of the production externality when coupled by the relevant responsibility/compensation transfers.

Introduction

Several public utilities, like water-sewage services or light and electricity systems, are essential to a decent standard of living. In a society whose agents may differ in terms of their basic needs for utility services, the latter should be taken into account when setting utility rates. In practice, commendable efforts certainly have been made in this regard, and appear in the "best practices" guidelines for public utilities. These practices recognize the fact that poor households should be subsidized, often through a rate premiums for large consumers, but the specific form that such subsidies and premiums take typically result from rule-of-thumb considerations. In other words, to the best of our knowledge, no systematic theoretical argument has been made to specify the form that utility rates should take in a population whose members may have varying needs. To fix ideas, we shall henceforth refer to residential water services.

We develop a framework to formally take matters of partial responsibility into account when devising rates for utility services. Each agent is summarized by their water consumption and their basic water needs, which may differ from one agent to the next. For instance, one can think of agents as being households of possibly different sizes. We take the view that agents are not responsible for their needs, but are fully responsible for their discretionary consumption (i.e., consumption beyond needs). We characterize two polar opposite rate-setting solutions that differ in how they prioritize holding agents responsible for their consumption over needs compensation. Namely, the *Conditionally Egalitarian* solution emphasizes responsibility for excessive usage while the *Egalitarian Equivalent* solution stresses compensation for differences in needs.

More precisely, the responsibility/compensation approach we adopt is related to that in Bossert & Fleurbaey (1996). It divides agent characteristics into two categories: those for which agents should be held responsible–discretionary water consumption, in our setting–and those for which characteristics should be not held responsible—water needs, here—and thus compensated. When balancing a budget is required, a tension immediately arises from this dichotomy: an agent with large needs should not be asked to pay more than if her needs were small, yet the total bill increases as a result. The question of who should pick up the difference is what is at stake, and depends on the relative emphasis put on responsibility and compensation.

Within these two solutions, we provide characterizations of several underlying cost-sharing rules to govern the management of the production externality when coupled by the relevant responsibility/compensation transfers.