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Contract renegotiation by an Italian wastewater utility: Action research to promote effective tariff revision

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ABSTRACT

This article focuses on the process of contract renegotiation by an Italian wastewater utility, commenced with the goal of tariff revision. The main aim of this paper is to identify the conditions that lead to contract renegotiation. It also develops new tools and operations that can facilitate this process. We utilized the action research method that involves organizations in changing situations supported by professional researchers who assume the role of change agents. The study provides some interesting insights on contract management and renegotiation, and highlights conditions that lead to the failure of contract-based regulation.

1. Introduction

Water and wastewater services may be operated under different contractual schemes, some of which are alternatives to the traditional approach where services are provided directly by a municipality with its own staff and assets. Currently, a clear and updated picture of the Italian water industry is not available, although a publicly available portal does report information on the providers of water services in each Italian municipality (the Portale dell'Acqua). However, it is worth mentioning that data from as recent as 2012 are available. In Italy, more recent data from AEEGSI show that 1384 municipalities (17% of the total) directly provided water services (Guerrini and Romano, 2014). There were also 366 other players, including private companies owned by municipalities/other public bodies, private investors, or by a mix of public and private owners in a public-private partnership (PPP). Out of these 366 companies, 164 were entrusted with managing all water services (water abstraction, disinfection, distribution, wastewater collection, and treatment), while the others were utilities involved in just one or more, but not all type of water service (such as distribution or treatment) as retailers, wholesalers/common carriers. In all of these cases, a private company entered into an agreement with a local government or, in the case of wholesalers/common carriers, with a retailer to gain the exclusive right to provide water services (Romano et al., 2017).

The contractual schemes, or a combination of them, that provide alternatives to the direct provision of water services are as follows (Smith and Culp, 2014; Reynaud, 2015):

- Services contracting: where a local government or retail firm outsources to a private company one or more services that could be provided by the internal staff of the municipality.
- Management contracting: where a private company operates and maintains one or more components of the water service that is formally carried out by a municipality or another utility.
- Leasing/affermage: where the local government transfers the responsibility of ensuring operations to a third party. Different from management contracts, in this approach the third party directly collects revenues from the customer.
- Design/build/operate/finance (DBOF): where a single entity is responsible for projecting, constructing, operating, and financing a component of the services and the government or utility pays it a periodic fee. Here, financing can be removed, in which case the acronym is DBO.

Abbreviations: PPP, public-private partnership; DBOF, design/build/operate/finance; ATO, optimal area served; AATO, authority of the optimal area served; AIT, Tuscan water authority; PE, person equivalent; MTN, normalized tariff method; AEEGSI, Italian national water authority; FCR, full cost recovery; OPEX, operating expenditure; CAPEX, capital expenditure.

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- Concession: where a private company (concessionaire) has the right to use the existing infrastructure to develop its business, with the main aim of realizing new investments and ensuring operation and maintenance. Different from DBO/DBOF, in this approach, the ownership of assets is public and revenues are collected directly by the private party. Traditionally, concession contracts are not regulated by regulatory agencies.

Sometimes, contracts fail to meet the changing environmental and operational conditions and formal contractual revisions become necessary (da Cruz and Marques, 2012). In such a case, the presence of information asymmetries between parties entails high transaction costs when sharing information and arranging contracts (Sappington and Stiglitz, 1987). Moreover, though contracts are always incomplete (Massarutto, 2007), to reduce the incompleteness and safeguard the public interest, the contracting process could include: an independent analysis by external consultants that can be required or not depending on public sector capacity; a bidding process; a statement of risk; a clear performance target; incentive-based regulation; a process of performance measurement and control; and mechanisms for conflict resolution (Beecher, 2001).

The main aim of the present paper is to develop tools and operations that can facilitate the contract renegotiation process and that could be used by managers and regulators to obtain reliable cost data to support tariff negotiation or renegotiation. Moreover, it identifies the conditions that might likely lead to contract renegotiation.

This paper contributes to the existing literature by providing a detailed description of the renegotiation process through an action research method (Greenwood and Lewin, 1998; Bryman and Bell, 2011) that involves organizations in changing situations supported by professional researchers who take on the role of change agents. Researchers usually trigger and facilitate the process of change, both involving all relevant actors in this process and launching innovative solutions that could be implemented by the relevant organizations. This method provided the researchers with a privileged observation point, allowing them to identify the main determinants of the "renegotiation" and to grasp how the parties involved could reach a new satisfactory agreement. The action research design is a novelty in this field, since prior literature has often studied contract renegotiations without any involvement by researchers in changing the agreements. The weaknesses of this method are the lack of repeatability and the independence of the researchers. However, there are also several strengths such as the abundance of data collected and the rich insight that cannot be gained without the interaction and involvement of researchers and practitioners (Bryman and Bell, 2011). Moreover, since a model of regulatory accounting is not yet available at the national level and the tariff-setting method of wholesalers/common carriers is unclear, this paper provides tools and operations that can be used by managers and regulators to obtain reliable cost data to support tariff negotiation or renegotiation by retailers and wholesalers/common carriers. This will allow them to meet their sustainability goals that include five dimensions (social, environment, economic, governance, and infrastructure) and many objectives (Marques et al., 2015).

The paper is based on a case study approach and thus has certain strengths and limitations. As previously described (Yin, 2013), it is quite difficult to generalize results and confirm theories based on a case study, although theory building can be done if good results are obtained (Eisenhardt, 1989). The chosen case is a wholesale supplier of wastewater treatment operating in Tuscany named Aquapur. In Tuscany, wastewater treatment agreements are stipulated by a supplier, who receives and treats wastewater, and a retailer, who is the concessionaire of water services in one or more municipalities. This kind of contract has some advantages for both parties involved. The supplier can allocate its fixed costs to a large number of billing units, obtaining economies of scale, while the retailer can avoid the cost of developing new infrastructures and increase its wastewater treatment capacity. At the same time, the lack of regulation contributes to making these private agreements incomplete, since tariffs and other conditions are negotiated in a context characterized by information asymmetries, so that the parties (retailers, wholesalers/common carriers) incur high transaction costs when revising the contractual conditions. Then, the incompleteness of the contracts determines the risk of default by one of the counterparts since the allowed revenues may not cover the costs, or could be excessive and undue. Without an active role for a regulatory agency, as seen in developing countries, a high rate of collapse has been reported (Nackla, 2016). For this reason, a model of "structural competition" (Beecher, 2001) is required to overcome these drawbacks. Such a model combines authority control and contracts models.

The paper is structured as follows. The next section provides a brief description of the literature on regulation, focusing on contract and tariff methods; then, the third section describes the wastewater utilities that operate in Tuscany, while the fourth section describes the process of tariff setting and the gaps between tariffs for wastewater services applied by wholesalers/common carriers and retailers. The fifth section illustrates the path followed by Aquapur for tariff revision and the results obtained. Finally, the study's practical implications and conclusions are presented in the sixth section.

2. Critical issues in contract regulation

A regulatory framework has to balance two main aims (Crew et al., 2006): safeguarding customers' interests by avoiding the retention of any monopoly on rent by concessionaries, and assuring the full recovery of costs incurred in service provision. The main tools adopted to achieve these aims are: incentive-based regulation, including price-caps and benchmarking; market competition through public tendering; contracts and their renegotiation (contract-based regulation); and a mechanism that allows charges on tariffs for all costs incurred by a firm (Massarutto and Ermano, 2013).

Regarding contract-based regulation, it must coexist with incentive-based tariff regulation (Beecher, 2001) or with other complementary solutions (e.g., an independent authority). This is to ensure contract completeness and avoid conflicts (Marin, 2009) and opportunism due to first mover advantages (Williamson, 1979).

Contract renegotiation can be useful for overcoming critical issues with a private agreement (Cruz and Marques, 2013a, 2013b). The literature on contract renegotiation provides two opposing views of this tool. According to the first view, renegotiation represents a lack of compliance with contractual terms and a departure from expected objectives (Guasch, 2004; Gagnepain et al., 2013). Furthermore, renegotiation results in higher transaction costs when searching for information and bargaining among parties over a new agreement (Masten and Saussier, 2000). The incomplete contract theory provides a different view of renegotiations: contract revision leads to updating terms in light of new information not available during the contract's conclusion (Grossman and Hart, 1986). This provides benefits for the concessionaire, who will realize unexpected investments. However, following this second view, the principal faces the risk of accepting *ex post facto* the inefficiencies of the concessionaire, thus endorsing their morally hazardous behavior (da Cruz and Marques, 2012).

Following the incomplete contract and transaction cost theories,

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