



Italian regulatory reform and water utility performance: An impact analysis

Andrea Guerrini^a, María Molinos-Senante^{b,c,d}, Giulia Romano^{e,*}



^a Department of Business Administration, University of Verona, Via Cantarane, 24, 37129, Verona, Italy

^b Departamento de Ingeniería Hidráulica y Ambiental, Pontificia Universidad Católica de Chile, Av. Vicuña Mackenna, 4860, Santiago, Chile

^c Escuela de Arquitectura e Instituto de Estudios Urbanos, Pontificia Universidad Católica de Chile, El Comendador, 1916, Santiago, Chile

^d Centro de Desarrollo Urbano Sustentable CONICYT/FONDAP/15110020, Av. Vicuña Mackenna, 4860, Santiago, Chile

^e Department of Economics and Management, University of Pisa, Via C. Ridolfi, 10, 56124, Pisa, Italy

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ABSTRACT

The Italian water sector has changed substantially over the past ten years. This study assesses the impact of the latest water sector regulatory reform, which follows a performance-based approach, using utility financial data. To understand the effects of reform on the sector, we analyze the performance of 136 Italian water utilities during 2009–2014. To this end, this study employs the non-parametric Luenberger productivity indicator, which shows improvement only between 2012 and 2013. The findings indicate the need for incentives for cost saving and productivity improvement, as well as the need for more investment.

1. Introduction

An economic regulatory framework, designed by government and authorities, must balance numerous aims (e.g., equity, efficiency, affordability, and sustainability). Foremost are the goals of safeguarding consumer interests by avoiding the retention of any monopoly on rent by utilities or concessionaries and ensuring the full recovery of costs incurred during service provision (Massarutto and Ermano, 2013). As highlighted by Massarutto and Ermano (2013), diverse institutional solutions are needed, in the form of an appropriate mix of formal ex-ante rules (contracts, norms, binding commitments) and ex-post settlements (revisions, renegotiations, cost pass-through, etc.).

Worldwide, many countries have adopted regulatory frameworks for the governance of public services. In the water sector, various regulatory tools are often combined as follows (Marques, 2010). Some countries have created independent authorities to set rules and supervise firms (England/Wales and Italy). The Italian Regulatory Authority for Energy, Networks and Environment (ARERA) is an independent regulatory body, established by Law No. 481 (November 14, 1995) with the purpose to protect the interests of consumers, promote competition, and ensure efficient, cost-effective, and profitable nationwide services with satisfactory service quality levels in the electricity and gas sectors. From 2011, based on law No. 214 (December 22), new regulatory competences in the integrated water service sector were attributed to the Authority, whose competencies now mainly refer to defining and maintaining a reliable and transparent tariff system, setting quality service standards, and defining a framework aimed at the protection

and empowerment of consumers on competitive markets. Its decision-making process is independent, transparent, and fully accountable. The Authority is financed through a levy on regulated utilities, which is completely segregated from the state budget. Its activity is defined by general policy guidelines provided by the Government and Parliament in the context of a multi-year strategic plan.

Other countries defer to local self-regulation, with direct provision of water services through departments or utilities entirely controlled by municipalities and city councils that approve tariffs developed by utilities and perform general audits. This model is used in some regions of France (Salvetti, 2014) and Germany. Competition is achieved by public tenders, and service contracting, management contracting, leasing/affermage, design/build/operate/finance, and concession represent alternative schemes for the provision of water services (Reynaud, 2015). In England and Wales, there have been attempts to foster competition in the water sector: Competition Act of 1998, followed by a Water Act of 2003, obliged incumbent firms to ensure access to their infrastructure for third parties that provide customers with more than 50,000 L/year. This type of infrastructure sharing, called “common carriage,” has also been introduced in other countries, such as Italy, even if with some limitations (Guerrini and Romano, 2017). Finally, incentive-based regulation leads water utilities toward performance improvement by various tools: this type of regulation may or may not affect tariffs and is sometimes based on “virtual competition” among monopolists through benchmarking. Sunshine regulation provides reputational incentives by comparing and publishing the performance of utilities in several European countries (the Netherlands,

* Corresponding author.

E-mail addresses: andrea.guerrini@univr.it (A. Guerrini), mmolinos@uc.cl (M. Molinos-Senante), giulia.romano@unipi.it (G. Romano).

Denmark, and Albania). Incentive regulation may combine revenue cap, or price caps with adjustments for volume variation, with a benchmarking process, which penalizes poor-performing utilities by setting lower prices (England/Wales, Denmark, and Italy).

In Italy, the water sector has been subject to wide reforms over the past seven years, starting with the Public Referenda of 2011, which delayed the provision for compulsory privatization of public utilities (stated by Law 133/2008) and the rate of return on investment of 7%, ensured to all water utilities by D.M. 01/08/1996, which set the tariff method. This was a turning point for regulation, which had been characterized up to that point by conflicting government reforms and local control exerted by municipalities through local water authorities. After the referenda, Law 201/2011 conferred the regulation and control of water services to an independent national authority, Autorità per l'Energia Elettrica, il Gas ed il Sistema Idrico (AEEGSI), now ARERA (since the beginning of 2018). The AEEGSI immediately defined a temporary method, covering 2012 and 2013, for determining the tariffs for water services, paying particular attention to investment and efficiency maximization (AEEGSI, act 585/2012). Over the subsequent regulatory period 2014–2015, AEEGSI, through Act 643/2013, set a new tariff method mainly focused on providing incentives for investments, but partially ignoring the efficiency of water utilities and incentives for boosting a circular economy based on water savings and reuse and on the recovery of resources from sludge (Romano et al., 2015). This method was partially updated for tariff computation for 2016–2019 through Act 664/2015.

This study provides a regulatory impact assessment of the changes affecting the Italian water sector from 2009 to 2014, with focus on the reforms in 2011/2012, which mandated AEEGSI to be responsible for the national regulation and supervision of the sector. This assessment was made by observing the performance of 136 water utilities during 2009–2014 by considering the variation in recorded annual productivity.

The main aim of the study is developing an assessment of Italy's latest water-sector regulatory reform, following a performance-based approach and using numerous utilities' financial data. The study provides some new insights on water regulation, since the reforms, starting from the one of 1994, have not evaluated the productivity change of water companies in terms of benefits and costs to the government. This reform is based on measuring improvements to utility efficiency and profitability. The collected evidence can inform governments and regulators in terms of the benefits of reforms as well as identify drawbacks and possible corrective action.

The remainder of the paper is structured as follows. Section 2 describes the evolution of Italian water regulation in recent years and provides details on the most recent tariff method developed by AEEGSI, which directly affects the performance of water utilities. Section 3 presents the 136 selected water utilities, discussing input and output measures collected from 2009 to 2014. The methods outlined in Section 4 describe the procedures followed to estimate the Luenberger productivity index (LPI) for measuring productivity changes during the period. Section 5 presents and discusses the results, while Section 6 provides final remarks and practical implications of the study.

2. Recent evolution of Italian water regulation

Law 152/2006 and Decree No. 201/2011 embed the current national framework for water services. The decree conferred regulation and control of water services onto AEEGSI from 2012, with the Ministry of the Environment responsible for other functions (e.g., defining the general objectives of water quality, developing ways to encourage water conservation, water-use efficiency, and wastewater reuse). AEEGSI regulates water services according to several aims: to guarantee universality, affordability, and quality of services; to establish a tariff system that is fair, reliable, transparent, and non-discriminatory; to protect the rights and interests of users; managing water services in

terms of efficiency and economic and financial stability; and to implement the European Community's "full cost recovery" principle.

These laws changed water governance from a model centered on local water authorities, called *Autorità d'Ambito Territoriale Ottimale* (AATO), to one with two levels of control. The first is carried out by AEEGSI and covers all water utilities, and the second is applied locally by *Ente di Governo di Ambito Territoriale Ottimale* (EGATO) on the water utilities operating in their areas. Previously, through Law 36/1994 (called the "Galli law," for Giancarlo Galli, the Italian parliamentarian who was its principal author), attempts were made to reorganize water services management, delegating regions to identify their optimal areas (ATO) to be managed under the supervision of a local public authority (AATO) for water services, formed by the served municipalities. There were two main drawbacks to the previous system of water governance. The first is localism of regulation, which allowed wide fragmentation in the water sector and differences among ATOs in terms of type and control strength. The second is conflict of interest for municipalities, which owned water utilities and, at the same time, were meant to control firms through AATO. The empowerment of AEEGSI thus allowed the sector to overcome localism and avoid the conflicts of interest from municipalities, limiting the control exerted by EGATO. The differences between AATO and EGATO mainly concern governmental power. While the former local authority (AATO) approved the tariff plan and verified and sanctioned water utilities for poor service quality, the new authority (EGATO) involved the transfer of several powers at the national level (AEEGSI).

AEEGSI began its activities in 2012 by issuing a transitional tariff model (metodo tariffario transitorio, MTT) and then developed a new model, metodo tariffario idrico (MTI), which is more consistent with European Union standards. The MTT replaces a model that had been in force since 1996, and was applied in 2012 and 2013 before being replaced by the MTI-1 for 2014–2015 and MTI-2 for 2016–2019.

The allowed revenues are now estimated according to the following rule:

$$VRG^a = Capex^a + FoNI^a + Opex^a + ERC^a + R_{TOT}^a,$$

where:

- VRG (vincolo ricavi garantiti) represents allowed revenues;
- Capex represents costs on fixed assets, including interest expenses, tax expenses, depreciation, and amortization;
- FoNI is a new tariff item to boost investments;
- Opex represents operating costs;
- ERC covers the environmental and resource costs not included in the other tariff components; and
- R_c represents adjustments for prior years' tariff.

The MTI provides a new paradigm for tariff estimation. Table 1 summarizes the main differences between the "normalized method" (MTN) and MTI-1. While the previous MTN was based on *ex-ante* regulation, which determines a tariff based on planned investments, the MTI applies CAPEX tariff coverage through an *ex-post* regulatory assessment and includes only investments made within the two preceding years. Therefore, the new model transfers the risk of delayed investment from the customers to the water utility.

This provision represents a significant reform, which could improve service quality. The former method did not incentivize firms to fulfill their investments, since they were reimbursed for the cost of their planned investments, even when not realized. Under *ex-ante* regulation, several utilities have experienced high tariffs and low rates of investment (Guerrini et al., 2011), owing to a lack of control from AATOs.

Other differences concern the methods followed to charge OPEX tariffs, the estimation of return on capital invested, and the introduction of new tariff items for new investments (FoNI) to cover environmental and resources costs and volume variance adjustments. Both tariff methods are structured as revenue-cap regulation, but while MTN

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