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# The 'hidden costs' of water provision: New evidence from the relationship between contracting-out and price in French water public services

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## ABSTRACT

In France, the management of public services such as water or sanitation can be done by the municipal council or contracted out to a private operator. This paper quantifies the impact of the choice of contracting out the management of water public services on price. It uses a unique dataset of utilities with unusual detailed financial indicators, such as debt of the water public service. We find evidence that private management is associated with higher prices on average *ceteris paribus* but that this difference disappears when we account for the 'hidden costs' of water, i.e. the price taking into consideration debt refunding of the public service which could increase the price in the following years. Indeed, private management is characterized by higher tariffs but lower debt level so that the price ensure the full-costs recovery while under public management, prices are set at a lower level than under private management but with a higher debt of the public service.

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## 1. Introduction

In France, as in most European countries, municipalities must provide local public services that have public good characteristics. Water is one of these public services: municipalities monitor prices, control entry and exit of firms into the market, organize competition and ensure uninterrupted service. The service can be managed in-house or be contracted out to a private operator using a public-private arrangement. Whatever the management system, the local authorities set the objectives - such as an uninterrupted service, resource conservation and affordable prices - and have to enforce them.

There are two conventional wisdoms in government contracting for industrial public services. On the one hand, critics of contracting out argue that private operators charge higher prices than governments in order to get a margin out of the exploitation of the public service. Defenders of contracting-out explain that prices are higher under private management because costs are covered and service quality is better. On the other hand, critics of government

provision underline the fact that governments might keep prices at a low-level for electoral reasons and subsidy public services using debt. This paper studies the difference of prices between public and private management in the French water public services. It particularly sheds light on whether there are differences of pricing, regarding service quality and debt-levels, between public and private management.

A particular feature of France is that public services such as water or transportation, for which municipalities have to produce the public good, are characterized by special accounts - 'supplementary budget' - so that the debt of the public service cannot be refunded by an increase in municipal taxes for example. In the rule of the law, there is thus permeability between the budget of the municipality and the budget of the water public services and it is not possible to cross-subsidy water using taxes or margins from other public services. The incidence of the municipal water budget's debt has largely been ignored in previous research on the industry, most probably because these indicators are difficult to collect, as municipalities and private operator have no obligations to publish it online. If one assumes that directly managed services *underprice* their output, e.g. by funding investments using debt rather than increasing fees, then there should be significant

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differences of indebtedness levels between directly managed and contracted out water services, which could *in fine* result in differences of prices paid by users.

This paper uses an original dataset of 115 water utilities in 2009 serving more than 9 million inhabitants in France. Our results show that private management is associated with lower public service's debt as compared to public management. We then recompute the current value of the debt to be refunded by each user under different hypotheses on the path of debt-refunding. To make things simple, we assume that debt can either be refunded in one shot (i.e. this year), in the next 5 years or in the next 10 years. We then recompute current prices to consider debt refunding using these several hypotheses. For example, if the debt per user in a given municipality is 30 euros, then it means that a user in this municipality should pay a 'real price' of his current bill plus 30 euros for this year. We call the addition of the effective price paid and the price taken into account the 'hidden costs' of water. Our results show that when one considers the hidden costs of water, there are no differences between direct management and contracting out *ceteris paribus*. Such a result provides a powerful explanation to the price premium found in favor of public management in many studies.

The paper is linked to a long-established research theme in economics which studies performance across organization forms, public provision versus private provision. Economists have been keen on analyzing the public vs. private ownership debate in public utilities. A major theme in the literature is that public ownership is inherently less efficient than private ownership (Alchian and Demsetz (1972)) since ownership is diffused among all members of society, and no member has the right to sell their share. Given these aspects of public ownership, there is little economic incentive for any owner to monitor the behavior of the firm's management. Overall, we would expect markets to better allocate resources and reduce prices but also in the competitive market (see Davies (1971), Caves and Christensen (1980) and Vining and Boardman (1992) for early empirical studies on the subject). A substantial body of empirical evidence documents the superior efficiency of private firms relative to comparable public firms and the improvement of efficiency after privatization (see La Porta and López-de Silanes (1999) and Chong and López-de Silanes (2004) for comprehensive studies and Megginson and Netter (2001) for a large literature review on the manufacturing industry) which can lead to an increase in price, because productivity increases, and debt per unit sold decreases. Firms' strategies are also analyzed in Schargrodsky (2003) who compares public and private firms in the US newspapers industry and finds that private ownership lowers selling price. This results from different managers' strategies and tastes, such as the quality vs. diffusion trade-off, something that is observed in the public management literature (see Boyne (2002) for a review).

In the water industries, the link between ownership and performance has been widely studied. Most studies use data envelopment analysis or stochastic frontier analysis (or a mix of both) or cost-functions and total factor productivity analyses). Renzetti and Dupont (2003) reviews different studies linking ownership and performance in France, the UK and the USA. They find no compelling evidence of private utilities outperforming public utilities. The same conclusion is observed in the literature review of Walter et al., (2009). In their literature review of the quantitative studies of water utilities, Berg and Marques (2011) found that out of 47 studies focusing on the ownership issue, 18 of them concluded that private water utilities were more efficient while 17 of them showed inconclusive results. An interesting result can be underlined in the paper by Suarez-Varela et al., (2017) who use a data envelopment analysis to compute the technical efficiency of water

utilities in Spain. Their results show that private management is more efficient in the use of labour input but less efficient at managing operational costs. This result is somehow similar to Saal and Parker (2000, 2001) who study the privatization of water utilities in England and Wales in 1989. Using cost function and Total Factor Productivity analyses to a panel of ten UK private companies, the authors conclude that there is no statistically significant reduction in the trend growth rate of total costs following privatization using cost function and no changes in productivity after privatization.

There are also many articles studying the relationship between ownership and price. Chong et al., (2006) use a 5000 French municipalities' database for 2001 and find *ceteris paribus* an 11-euro premium of private management relative to the direct public management on baseline bills of 120 cubic meter consumption. This result is confirmed by Carpentier et al., (2006) using treatment effects. They however conclude that private management copy with harder operating environments. Both papers conclude that local governments are keener to contract out the management of water public services if they are more technically difficult to provide. A recent study by Chong et al. (2015) shows that over the 1998–2008 period, contracting out has a positive impact on price but the impact narrows or disappears when one considers big cities, as they have probably more capabilities to negotiate contracts with private operators.

The price premium of private management is also found in other countries. In Spain, Martínez-Espineira et al., (2009) use a treatment effects model on a sample of 53 major urban municipalities and found that there is a significant positive impact of privatization on prices. Using a set of 386 Southern Spanish municipalities, García-Valiñas et al., (2013) deal with an original framework in which externalization can be done through institutionalised public-private partnerships, whereby capital is shared between the public and private sector, or contractual public-private partnerships, which are similar to concessions. The results show that prices are higher under contractual public-private partnerships and institutionalised public-private partnerships than under direct management. Using a database of 765 German water suppliers, Ruester and Zschille (2010) also found that private sector participation increases price in Germany. On the contrary, Romano et al., (2015) show that in Italy ownership does not influence the tariffs levied by water utilities.

The water public service in France is a good candidate for an empirical study of the impact of contracting out on price for several reasons. First, tap water is a quasi-homogeneous good with very little differences in quality.<sup>1</sup> Second, the market for water distribution is large, covering the whole French population. Third, private sector participation has been growing since the 1980s. As private firms now serve more than 60% of the French municipalities, the impact of private participation can thus be large. Fourth, there are no secondary markets that can mitigate the impact of the private sector participation or transfer it to other markets, as such was the case in telecommunications or wireless internet access. Finally, perhaps the most salient motivation for investigating this industry is that contracting out has been drawing a lot of attention in the media with several non-governmental organizations praising remunicipalizations. This paper contributes to the large literature on the comparative economics of direct management and contracting out in public services.

The present study has several policy implications. First, municipalities and private operators have to be aware that when they

<sup>1</sup> Water quality in France has long been guaranteed and is drinkable across the whole French territory, even in overseas territories.

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