

# Documents de travail

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# Retaking Control of Local Public Services A Step-by-Step Strategy

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#### Abstract

In this paper, we studied the influence of contract renewals on water prices in France. When studying French water contracts in force between 2008 and 2018, we found that contract renewals have little influence on the prices paid by consumers. However, at contract renewal times, the share of the price that goes to the firms decreases. This price decrease is compensated by an increase in the share of the price that is retained by the municipalities. We interpret this result as a willingness by municipalities to retake control of water services. We show that the higher the municipalities' shares are, the higher the probability of switching to direct public management at contract renewal times. This suggests a step-by-step strategy, with local authorities first increasing their responsibilities in providing water services (i.e., increasing their price shares) before switching to direct public management.

JEL Classification: H11; L33; L95.

Keywords: Public-private partnerships; contract renewals; private management; water prices

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## 1 Introduction

Contracting out public services to private firms is a longstanding practice to promote efficiency and responsiveness in local government service delivery (Osborne, David and Gaeble, Tedr (1993)). Empirical papers have suggested that local authorities are guided primarily by pragmatic concerns such as information, monitoring, transaction costs and service quality (see, for example, Warner and Hebdon (2001), for the United States; Bel and Miralles (2003), for Spain; Tavares and Camöes (2007), for Portugal; and Ménard and Saussier (2002), for France). A more general finding of this literature is that there do not appear to be many ideological arguments influencing politicians' decisions (Bel and Fageda (2009), Bel and Fageda (2017), Chong et al. (2015)), although some studies have highlighted the role of electoral terms and political fragmentation in determining the probability of privatizing local public services (Gradus and Budding (2018), leaving the debate open.

In Europe, the privatization of municipal public service provision has been a phenomenon since the 1980s, but in the last decade, there is increasing evidence of trends in the opposite direction. Contract reversals to direct public management are increasingly frequent. This is especially the case for water services. Kishimoto et al. (2015) found that between 2000 and 2015, at least 67 cities in 37 countries contracted back their water services, affecting at least 100 million people. The number of contract reversals doubled in the 2010-2015 period compared with the 2000-2010 period, illustrating a tendency toward deprivatization, especially in high-income countries, where the majority of those cases occurred.

The French case exemplifies this issue. For more than a century, private provision has been the rule rather than the exception in the French water sector (more than 65% of the population is served by private water utilities). However, there is a new tendency toward deprivatization, as illustrated by the city of Paris, which decided to deprivatize water services in 2009 after decades of private management. As mentioned by Kishimoto et al. (2015), nearly 50% of such cases observed worldwide took place in France.

In this paper, we shed light on the contract reversal issue. We posit that local authorities have a step-by-step strategy to deprivatize local public services. We collected information on French water contracts in force between 2008 and 2018. Focusing on renewal stages, we first found that there is no visible competition effect (i.e. calls for bids at renewal stages have no impact on prices), confirming previous studies such as Chong et al. (2006) or Chong et al. (2015). However, we then decomposed the price, identifying the part that goes to the firm and the part that goes to the municipality,

and we found a strong influence of contract renewals and a clear correlation between the two price components. Contract renewals decrease the part of the price that goes to the firm. This price decrease is compensated by an increase in the part of the price that is kept by the municipality. In addition, we found that the larger the price share kept by the municipality is, the higher the probability of contract reversal at contract renewal times. This reinforced our confidence in our interpretation of the results that the price share kept by local authorities reflects their willingness to retake control of water services.

Our paper is connected to a set of previous papers that have examined the impact of privatization on prices in the water sector. The vast majority of those papers performed comparative analyses of prices between public and private management (see, for example, Garcia-Valinas et al. (2013), Lannier and Porcher (2014) or González-Gómez and García-Rubio (2018), for a survey Porcher and Saussier (2018)). Others have examined the influence of public interference in water prices during the execution stage through government-led opportunistic renegotiations (Valero (2015), Guasch et al. (2007)), frequently preceding election years (Picazo-Tadeo et al. (2020)). The paper that is the closest to our study is Chong et al. (2015). The authors examined the probability of switching from public to private and from private to public provision of water in France at contract renewal. Chong et al. (2015) focused on price differences between public and private delivery to explain observed switches. In this paper, we are not interested in the public vs. private efficiency issue. Instead, we focus on the private delivery of water services and investigate the influence of contract renewals on prices paid by consumers and on how prices are shared between the firm and the municipality. We argue that contract renewal times are windows of opportunity for municipalities to retake control of their water services. Full control through contract termination or step-by-step control through an increase in their influence on water services translates into a higher share of the price being kept by the municipality and a shorter contract duration for the private firm.

We believe that our paper contributes to the literature on how municipalities organize their public services by highlighting that they do not face a binary choice between make or buy. More fundamentally, how municipalities organize their water services depends on the level of control they wish to achieve over water services. Full control would translate into direct public management but not necessarily in a one-step procedure. We provide evidence of a possible step-by-step strategy, with municipalities retaking increasingly more control over water services.

This paper is organized as follows. Section 2 presents the French institutional context and our propositions. Section 3 is dedicated to a presentation of our data and empirical strategy. We present our results in Section 4 and discuss them in Section 5, and our conclusions follow.

# 2 Water Prices in France

#### 2.1 Institutional details

In France, as in many countries, drinking water is a local public service under municipal responsibility. As in most European countries, municipalities can decide to provide drinking water through "direct public management" or through private providers. Of the 12,450 French drinking water services, 30% are managed by a private operator and 70% by the public. However, these private contracts serve 58% of the French population.

The decision to contract out water services is made through periodic calls for tenders to select private providers. The private provider that wins the contract has a local monopoly for the duration of the contract. Chong et al. (2015) indicates that the duration of such contracts in France is approximately 12 years on average. The end of the contract implies a compulsory re-competition that can lead to the renewal of the operator in place or its replacement by a more efficient competitor. This mechanism is thought of as an incentive for contractual performance, a periodic auction.

The debate in France concerning the efficiency of public vs. private management is lively. This is especially true because prices have increased over time and do not appear to be influenced by contract renewals. As a consequence, an increasing number of municipalities have decided to remunicipalize drinking water management over the past several years, generally contending that the water price is too high or complaining of a loss of control over investments that have been made.

#### 2.2 Water price structure

When municipalities decide to select a private firm to provide water to their citizens, they nevertheless retain some of the responsibilities for the service. Notably, they are usually in charge of infrastructure investment. This is why the final price of water paid by end users consists of several shares (see Figure 1).



One share goes to the private operator to pay for infrastructure maintenance and water delivery costs. This part is determined after private firms compete through a call for bids at contract renewal. The final price paid by consumers also consists of one share that goes to municipalities to pay for infrastructure investments and costs to control the private firm in charge of delivering the water. This "public" share thus reflects the level of control that is maintained by municipalities. It reflects the cost born by municipalities to run the service in cooperation with the private provider.<sup>1</sup>

#### 2.3 Contract Renewals, Prices and Remunicipalizations: Propositions

If we denote as  $\operatorname{Price}_F$  the price share retained by firms and  $\operatorname{Price}_M$  as the price share retained by municipalities, the total price of water is given by  $\operatorname{Price}_F + \operatorname{Price}_M$ 

At contract renewal, municipalities organize competition for the market through a call for bids. Firms are periodically placed in competition. They compete to be a monopolist for the duration of the contact, which has a price cap. If there is competition in the market, we should therefore observe a price decrease between former and new contracts following contract renewals (see, for example, Amaral et al. (2013) in the case of bus transport in London), at least concerning the firm's share,  $\operatorname{Price}_{F}$ .

#### Proposition 1. (Competition effect) At contract renewal times, the price paid by consumers to private firms decreases, all things being equal.

Concerning the price share that is going to municipalities,  $\operatorname{Price}_M$ , we expect it to increase or

<sup>1</sup> In France, cross-subsidies are prohibited. The principle is that "water pays for water", i.e., the service must be able to entirely finance itself.

decrease depending on the level of control municipalities are willing to exercise in water service provision. If municipalities are willing to increase their control at the contract renewal stage, we expect a negative correlation between  $\operatorname{Price}_M$  and  $\operatorname{Price}_F$  (i.e.,  $\operatorname{Price}_F$  is decreasing in the contract renewal stage partly because municipalities are retaking some (costly) responsibilities.

This leads us to our second proposition:

Proposition 2. (Control effect) At contract renewal times, the price paid by consumers to municipalities that are willing to increase their control over water services is negatively correlated with the price paid by consumers to private firms, all things being equal.

Municipalities might also consider retaking control of water services and provide them through direct public management (i.e., remunicipalization). However, switching from private to public management might be difficult and costly. When municipalities decide to contract out the provision of their public services, they lose knowledge and capabilities that are often difficult to reacquire. In other words, switching costs associated with remunicipalization are important and may explain why many municipalities complain about how public services are provided by private firms but do not decide to remunicipalize (see, for example, Chong et al. (2015)). Hence, municipalities might consider a step-by-step strategy consisting of increasing their responsibilities in providing water services to acquire knowledge and capabilities first before, in a second step, considering providing water services through direct public management.

Proposition 3. (Two-step strategy) At contract renewal times, the larger the share of the price retained by a municipality, the higher the probability that the municipality will switch to direct public management, all things being equal.

## 3 Data and Empirical Strategy

#### 3.1 Data

In this paper, we use an official database that is provided by the French Ministry of Environment.<sup>2</sup> It permits us to work on unbalanced panel data set of water services provided by private firms,

<sup>&</sup>lt;sup>2</sup>The data set is open access and available here: http://www.services.eaufrance.fr/donnees

from 2008 to 2018, with information concerning more than 3700 services, observed on average for more than 5 years.

The data set gives us information about prices. We constructed price variables (in euros), all calculated on a standardized basis for the annual consumption of 120 cubic meters. The variable **Price** is the total price paid by the end consumer. Fixed tariff components and taxes are excluded. The variable **Price-M** is the price share retained by the municipality. The variable **Price-F** is the price share retained by the firm. The descriptive statistics table indicates that, on average, the price share of the municipality represents 38% of the total price paid by the final consumer, against 61% for the private share.

We also constructed a set of variables related to contract renewal. The binary variables  $R_i$  (where i = [2008; 2018]) are dummies indicating the year of contract renewal for a given contract. The dummy variable **Renewed** is equal to 1 the year that the observed contract was renewed if it was renewed during the period we study. The average contract duration is less than 13 years, and nearly all of those contracts were renewed during the studied period.

Finally, we also constructed a set of variables that will be used and presented in the discussion section of the paper, *Renewal Rate*, *Network Efficiency*, *Debt Duration* and *Contract Duration*. Table 1 presents the different variables used in our regressions.

Variables	Definition	Mean	SD	Min.	Max.	Ν
Price	Total water price for 120 cubic meters in euros, taxes		58.876	34	748	20323
	and fixed fee excluded					
Price-M	Price share kept by municipality in euros	77.740	42.538	15	373	20323
Price-F	Price share kept by firm in euros	126.492	46.037	18	395	20323
Renewed	Dummy variable taking value 1 the specific year the	0.044	0.205	0	1	20323
	contract is renewed					
R2008	Dummy variable taking value 1 in year 2008 if the	0.001	0.038	0	1	20323
	contract is renewed in 2008					
R2009	Dummy variable taking value 1 in year 2009 if the	0.005	0.068	0	1	20323
	contract is renewed in 2009					
R2010	Dummy variable taking value 1 in year 2010 if the	0.005	0.070	0	1	20323
	contract is renewed in 2010					
R2011	Dummy variable taking value 1 in year 2011 if the	0.005	0.069	0	1	20323
	contract is renewed in 2011					
R2012	Dummy variable taking value 1 in year 2012 if the	0.004	0.066	0	1	20323
	contract is renewed in 2012					
R2013	Dummy variable taking value 1 in year 2013 if the	0.005	0.067	0	1	20323
	contract is renewed in 2013					
R2014	Dummy variable taking value 1 in year 2014 if the	0.003	0.053	0	1	20323
	contract is renewed in 2014					
R2015	Dummy variable taking value 1 in year 2015 if the	0.005	0.073	0	1	20323
	contract is renewed in 2015					
R2016	Dummy variable taking value 1 in year 2016 if the	0.005	0.074	0	1	20323
	contract is renewed in 2016					
R2017	Dummy variable taking value 1 in year 2017 if the	0.006	0.075	0	1	20323
	contract is renewed in 2017					
Debt duration	Number of years necessary to repay the debt due to	5.660	7.041	0	80	2000
	the loans contracted to finance the investments.					
Contract Duration	Duration of the contract, in years	12.90	6.63	1	96	13969
Renewal Rate	(network of km renewed per year / number of km of	0.49	2.07	0	94	15267
	network)					
Network Efficiency	(Total sold water quantity / Total produced water	78.68	10.17	18	100	19815
	quantity)*100					
Price-M Ratio	Price-M/Price	0.375	0.151	0	1	20323
Price-F Ratio	Price-F/Price	0.625	0.151	0	1	20323
Prop-Public	Proportion of water services managed through direct	0.679	0.227	0	1	20323
	public management in the local county ("departe-					
	ment" in France)					

#### Table 1: Descriptive Statistics of our Variables

#### 3.2 Water Prices

Regarding our data, we see that, at first glance, there is no clear effect of contract renewals on total water prices paid by consumers (see Figure 2).



Figure 2: Water Price Before (t-1) and After Renewals (t+1)

This figure depicts the total water price paid the year before and the year after contracts were renewed. Contracts are represented by dots. Dots below (above) the straight line are contracts for which renewals decreased (increased) prices.

However, as described above, the total price paid by consumers consists of two shares, one going to the firm and one going to the municipality. In the following figures, we highlight the influence of contract renewals on those two price shares.

In Figure 3, we observe that contract renewals decrease, on average, the firm's share of the water price. The magnitude of the decrease depends on the year considered, but regardless of the year considered, contract renewals negatively impact the share of the price that is retained by firms.



Figure 3: Firm Price Shares and Contract Renewals (Deflated prices)

This figure depicts the price paid to private firms for water services. Each chart addresses contracts renewed in a specific year (e.g., the upper-left chart concerns only contracts renewed in 2009).



Figure 4: Municipality Price Shares and Contract Renewals (Deflated prices)

This figure depicts the price paid to municipalities for water services. Each chart addresses contracts renewed in a specific year (e.g., the upper-left chart concerns only contracts renewed in 2009).

In Figure 4, we observe that contract renewals increase, on average, the municipality's share of the water price. The magnitude of the increase depends on the year considered, but regardless of the year considered, contract renewals positively impact the share of the price that is retained by municipalities.

#### 3.3 Empirical Strategy

#### 3.3.1 Contract Renewals and Prices

In this paper, we are interested in how contract renewals affect water prices, how prices are shared between private firms and municipalities and how this may translate into remunicipalization. To explore whether water prices are affected by contract renewals, we estimate the following model:

$$Price_{i,t} = \alpha + \beta Renew_{i,t} + \delta_t + \gamma_i + \epsilon_{i,t}$$
(1)

where the price of water services at time t in municipality i is given by  $Price_{it}$ .

 $\gamma_i$  is the time-consistent unobserved heterogeneity.  $\epsilon_{i,t}$  is the idiosyncratic error, or time-varying unobserved heterogeneity.  $\gamma_i + \epsilon_{i,t}$  is the composite error term.

Note that price varies with many elements that influence the cost of providing the service, such as the kind of water treatment used or the region that concerned. However, to correct for the endogeneity caused by unobserved time-consistent effects,<sup>3</sup> we use within estimates. Variables that do not change over time are thus not included in our estimates. We also add some year fixed effects to control for time-varying but panel-constant unobserved effects. Introducing such fixed effects is a way to capture possible political cycle effects (see, for example, Picazo-Tadeo et al. (2020))

#### 3.3.2 Municipalities' Price Shares and the Decision to Switch to Direct Public Management

To explore how the way in which prices are shared between municipalities and firms affects the decision to contract out or provide water services through direct public management, we estimate the following probit model:

$$Public_{it} = 1[Public_{it}^* = \alpha + \beta PriceM_{it} + \delta_t + \gamma_i + \epsilon_{i,t} > 0]$$

$$\tag{2}$$

where 1 is the indicator function, which takes a value of 1 whenever the statement in brackets is true, zero otherwise;  $Public_{it}$  is a binary variable that indicates whether municipality *i* at contract renewal *t* decided to provide water services through direct public management (i.e., to remunicipalize).

Our hypothesis is that the higher the price share retained by municipalities, the more likely we should be to observe remunicipalization.

<sup>&</sup>lt;sup>3</sup>Because  $\text{Cov}(\gamma_i, x_{i,t}) \neq 0$ , the OLS estimator applied to (1) is inconsistent.

# 4 Results

#### 4.1 Contract Renewals and Water Prices

The results are presented in Table 2.

	(1)	$(\mathbf{n})$	(2)	(4)	(٢)
	(1)	(2)	(3)	(4)	(5)
	Price	Price-F	Price-M	Price-M	Price-F
Renewed	-1.5621*	-4.2736***	$2.7115^{***}$	$1.6706^{**}$	-3.3095***
	(0.9352)	(0.8484)	(0.6607)	(0.6734)	(0.8048)
Price-F				-0.2436***	
				(0.0255)	
Price-M					-0.3556***
					(0.0429)
Constant	207.5014***	$126.3409^{***}$	81.1605***	111.9339***	155.1976***
	(0.5520)	(0.5090)	(0.4300)	(3.2421)	(3.5146)
Years F.E.	Yes	Yes	Yes	Yes	Yes
r2	0.014	0.008	0.040	0.123	0.094
Ν	20323	20323	20323	20323	20323

Table 2: Contract Renewals and Water Prices

Within estimates. Heteroskedasticity-robust standard errors are reported in parentheses. Every estimate includes municipality fixed effects. Prices are deflated. \* denotes significance at 10%, \*\* significance at 5%, and \*\*\* significance at 1%.

Several results worthy of comment. First, water contract renewals influence the total price paid by consumers (Model (1)). However, the effect is small (i.e., less than 2 euros per 120 cubic meters, corresponding to a less than 1% price decrease), and the coefficient is significant only at the 10% level.

Turning to the impact of contract renewals on the share of the price that is retained by firms, we see that the competition effect is strong (Model (2)). When a contract is renewed, the price decreases by more than 4 euros on average, corresponding to a 3% firm price decrease.

Contract renewals also significantly impact the share of the price retained by municipalities (Model

(3)). We found a positive price impact greater than 2.5 euros on average, corresponding to an increase of more than 3% in the municipality price.

We also observe a negative correlation between the two parts of the price (Model (4)). The higher the price for the firm is, the lower the price for municipalities. This result was expected because the price shares reflect the responsibilities and level of control of contracting parties over water services. The higher the control of the municipality is, the higher its price share and the lower the price share going to the private firm.

Even when controlling for the evolution of the responsibilities held by firms, the competition effect at contract renewal persists in Model (5). Even after including the price share of the municipality in the model, there is a competition effect that influences the part of the price retained by firms (i.e., this share still decreases by more than 3 euros)

# 4.2 Municipalities' Price Shares and the Decision to Switch to Direct Public Management

One striking result is the inverse relationship between municipalities and firms' price shares. One pertinent question is to understand why municipalities increase their price share when they succeed at reducing the price share of firms through competition during contract renewal periods.

Our hypothesis is that the change in the price shares between firms and municipalities is a prerequisite for future remunicipalizations. To test our hypothesis, we introduce new variables. The first is **Price-F Share**, defined as the share of the total price that is retained by the private firm (price-F/Total price). We also constructed a new variable **PropPublic**, which is the proportion of water services delivered through direct public management in the department.<sup>4</sup> This variable captures the fact that the more water services in areas near the municipality that are delivered through direct public management, the easier it is for a municipality to switch back to public management.

The results are presented in Table 3. We found that the higher the price share retained by firms, the less likely municipalities are to remunicipalize water services (Model 1). This result is in line with our proposition 3. Our interpretation is that when the price share retained by firms is high, municipalities have lost the control and capabilities to directly manage water services. Remunicipalization would be costly in such a case. However, our results suggest that this cost is

 $<sup>{}^{4}</sup>$ In the administrative divisions of France, the department is one of the three levels of government under the national level.

also connected to the presence of neighboring municipalities operating their water services through direct public management (Model 2).

	(1)	(2)
	Public	Public
L.Price-F Ratio	-13.0853***	-16.3179***
	(2.9729)	(3.3165)
Prop Public		$6.8939^{****}$
		(1.9473)
Constant	0.9622	-2.6049*
	(0.9228)	(1.4386)
Years F.E.	Yes	Yes
11	-150.863	-138.155
Ν	1058	1058

Table 3: Switches back to public management at contract renewal times

Probit within estimates. The variable Price-F Ratio is lagged. Heteroskedasticity-robust standard errors are reported in parentheses. Every estimate includes municipality fixed effects. Prices are deflated. \* denotes significance at 10%, \*\* significance at 5%, and \*\*\* significance at 1%.

# 5 Alternative Explanations: Municipalities' Price Shares, Investments and Debts

Municipalities retain a share of the price paid by consumers to fund costly investments in the network that cannot be recouped by firms because of the short contract duration. An increase in the municipal price share might reflect municipalities' willingness to invest more in the water network or to increase its rate of renewal or its efficiency by reducing leakage. However, they are not willing to expand their control over water services by expanding the scope of their responsibilities. If this is the case, we should observe less leakage and a higher renewal rate of the network once the share of the price retained by municipalities increases. To test this alternative explanation, we created two new variables (see Table 1 for descriptive statistics). *Network Efficiency* is the inverse of the rate of leakage in the network. This rate is directly connected to the level of infrastructure investment. The *Renewal Rate* variable provides information on the percentage of network renewed by the operator. This variable is important because it is also a proxy for the investments made.

Another possibility is that municipalities took advantage of lower prices from firms at contract renewal times to increase their share and reduce the municipality's debts. To explore this possibility, we created the variable **Debt Duration**, which is the duration of the drinking water services' debt. On average, this duration is 5.6 years.

The results are presented in Table 4.

	(9)	(10)	(11)	(12)	(14)	(15)
	Network Eff	Network Eff	Renewal rate	Renewal rate	Debt duration	Debt duration
	b/se	b/se	b/se	b/se	b/se	b/se
Renewed	-0.0728		-0.0411		-0.5664	
	(0.2672)		(0.0438)		(0.5761)	
Price-M Ratio		-0.5179		-0.2553		-2.3348
		(1.2560)		(0.3815)		(2.4174)
Constant	79.4956***	79.6961***	0.5322***	0.6311***	$4.9095^{***}$	$5.6903^{***}$
	(0.1487)	(0.5075)	(0.0545)	(0.1657)	(0.2948)	(0.8936)
Years F.E.	Yes	Yes	Yes	Yes	Yes	Yes
r2	0.015	0.015	0.001	0.001	0.030	0.031
Ν	19850	19850	15265	15265	2369	2353

Table 4: Municipalities' price shares, network rate of renewal and debt duration

Within estimates. Price-M Ratio is defined as (Price-M / Total Price). Heteroskedasticity-robust standard errors are reported in parentheses. Every estimate includes municipality fixed effects. The number of observations varies because of many unavailable observations. Prices are deflated. \* denotes significance at 10%, \*\* significance at 5%, and \*\*\* significance at 1%.

We observe that there is no correlation between the municipalities' price shares and investments made in the network. We observe no effect on the rate of renewal or on network efficiency. There is also no effect on the length of the municipalities' debt reimbursement. We do not find any difference between contracts that have been renewed and others. All these results suggest that municipalities did not increase the share of the price they received to invest more in the network or to reduce the debt level of the water services but did so to change the scope of their activities to increase their control over water services and ultimately to switch back to direct public management.

## 6 Conclusion

In Europe, the municipal provision of public services has been substantially privatized since the 1980s. Water was no exception. However, in the last decade, there is increasing evidence of trends in the opposite direction (i.e., remunicipalization). This is especially the case for water services, as stressed by Kishimoto et al. (2015), who found that between 2000 and 2015, at least 67 cities in 37 countries deprivatized their water services, affecting at least 100 million people.

In this paper, we suggest that the first wave of remunicipalizations in France might be followed by a second wave. This is because the decision to remunicipalize might be implemented through a stepby-step strategy by municipalities to retake control of water services. Specifically, we showed that contract renewals have little influence on prices paid by consumers but decrease the share of the price that goes to the firm. This price decrease is compensated by an increase in the share of the price that is retained by the municipalities. Because we were unable to correlate the municipalities' price shares and network investments, this suggests that this increase is the result of the municipalities' willingness to increase their control over water services and to develop capabilities to remunicipalize in a second step, with lower switching costs.

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