

**WEAKENING POLITICAL CONNECTIONS BY MEANS OF REGULATORY REFORM:
EVIDENCE FROM CONTRACTING OUT WATER SERVICES IN SPAIN**

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Abstract. One area of public policy where rent-seeking and favoritism is relatively common is the contracting out of public services. Private firms can improve their chances of obtaining contracts by bribing politicians or public servants and funding political parties. In the same vein, firms can gain access to policymakers by hiring influential former politicians –a practice commonly referred to as *revolving-doors*. In this paper, we use information from 922 privatizations of water services in Spanish municipalities between 1984 and 2016 and multinomial logistic regression techniques to study the association between specific firms securing contracts and the political parties ruling the municipalities. We find robust statistical evidence of an association between the Popular Party (*Partido Popular* or PP) and the firm *Aqualia*, part of the large Spanish holding company *Fomento de Construcciones y Contratas* (FCC), which is known to have funded the Popular Party. Furthermore, former PP politicians have been appointed to top positions in the FCC Board of Directors. However, this relationship weakened after the institutional reform of 2007 on public procurement and financing of political parties, which is empirically evaluated in this paper.

Keywords. Rent-seeking; political connections; privatization; urban water services; Spain.

JEL Classification. D73; L33; L95.

Highlights.

- Favoritism is relatively common in contracting out public services
- We find political connections in contracting out water services in Spain
- Political connections were weakened with some regulatory reforms in 2007
- More regulatory and institutional reforms are needed in Spain to further weaken political connections

WEAKENING POLITICAL CONNECTIONS BY MEANS OF REGULATORY REFORM: EVIDENCE FROM CONTRACTING OUT WATER SERVICES IN SPAIN

1. Introduction and background

The study of rent-seeking has long been a key element in the analysis of the motivations of governments' decisions. Rent-seeking has been defined as '*...The quest for privileged benefits from government*' (Aidt, 2016:144). According to Lambsdorff (2002:101), the focus of rent-seeking is on the interaction between the state and private parties, where the government has the monopoly on allocating property rights. The study of how individuals or firms can benefit from political influence and connections has received attention in the field of economics, ever since the seminal papers of Stigler (1971) and Peltzman (1976). In particular, Stigler (1971) discussed financial support for electoral campaigns, and funding for the bureaucratic tasks of the political party machinery as potential demands that governing parties can make in exchange for regulation in favor of specific industries or firms. In recent years, there has been an accumulation of empirical evidence on the existence of strong, mutually beneficial linkages between firms and politicians (Acemoglu *et al.*, 2016; Akin *et al.*, 2016; Faccio *et al.*, 2006).

One of the fields most closely linked to political rent-seeking and favoritism is that of privatization of public services (Hart *et al.*, 1997). In this context, rent-seeking may occur when a company secures public service contracts in exchange for financial donations or board positions, among others. Empirical evidence on the relationship between political connections and financial donations, and the allocation of procurement contracts has been provided for different levels of government: federal (Boas *et al.*, 2014; Goldman *et al.*, 2013; Witko, 2011) as well as local (Amore & Bennedsen, 2013). This practice is contrary to the public interest, because it does not guarantee that the best-performing company is awarded the contract. This is therefore likely to lead to inefficiency (Dal Bó & Rossi, 2007), lower service quality and extra service delivery costs (Dastidar & Mukherjee, 2014), which will ultimately be borne by users or by taxpayers (Rose-Ackerman, 1999; Tollison, 2012). In short, it adversely affects the expected social welfare of a contracting auction (Boehm & Olaya, 2006).

Furthermore, Hart *et al.* (1997) contend that the policymakers engaging in rent-seeking in public services delivery are incentivized to create over-employment when public services

are delivered in-house, thus engaging in political patronage and obtaining political support. Conversely, if service delivery is contracted out, rent-seeking politicians will tend to obtain financial resources, rather than over-employment, which can be used for personal enrichment, to fund political activities (elections and party machinery), or both. Personal enrichment is closely associated with illegal behavior and corruption; however, the funding of political parties or electoral campaigns by firms is legal in most democracies. Hence, rent-seeking does not necessarily involve illegal practices, and can be seen as different from corruption. In fact, our study does not deal with corruption, but rather with potential favoritism between political parties and firms, based on funding to the party, and revolving doors between governments and firms.

According to Ariño (2009), decisions related to the procurement of public services are also one of the main sources of political rent-seeking and favoritism in Spain. On the one hand, scholars and politicians recognize that the rules on the financing of Spanish political parties establish an overly restrictive framework for securing resources –donations are limited to €60,000 per donor, and the contributions by party members are largely insignificant–, and create a system that is overly dependent on government subsidies (Pujas & Rhodes, 1999; Casal *et al.*, 2014). In fact, this has been used as an argument to explain why Spanish political parties have irregularly obtained resources at some point (Bel *et al.*, 2014); since the 1990s, judiciary courts and the Court of Auditors (*Tribunal de Cuentas*) have investigated several political parties over events such as the cancellation of parties' bank debts, corporate donations and bribery.

On the other hand, the processes for awarding contracts in Spain are not characterized by transparency and independence. The lack of transparency was partially addressed some years ago by Law 30/2007 on Public Sector Contracts. However, external control is insufficient, and the hiring process is largely under the control of local government itself. Besides, an additional problem is the difficulty faced by the judiciary in obtaining evidence of malpractice, and the lengthy judicial processes. An index recently developed by the RAND Corporation (Stanley *et al.*, 2014) assesses aspects such as the expectation of bribes and anti-bribery laws, and ranks Spain as one of the developed countries with the highest risk of bribery.

Against this background, our paper focuses on two main research questions, namely, the possible existence of political connections between the main Spanish political parties and major private firms in the urban water delivery industry; and the impact of two laws (Organic Law 8/2007 and Law 30/2007) passed in Spain in 2007, which were aimed at increasing transparency in the funding of political parties, and ensuring objectivity in the procurement of public services. Our first hypothesis is the existence of a systematic relationship between companies that win privatization contests and the political party that holds the municipal government. This is a reasonable suspicion in Spain, judging by the many cases that are currently under judicial investigation for alleged corporate payments in exchange for preferential treatment in the awarding of public contracts for water service management (GWI, 2013). Due to the slowness of the judicial system in Spain, most of these cases date back to the past decade. If our study reveals significant relationships, these could be interpreted as indirect evidence of favoritism. Our second and more interesting hypothesis is that the legal reforms implemented in 2007 made it more difficult to engage in favoritism in the awarding to private firms of contracts for urban water delivery.

The study centers on 922 agreements to privatize water services management made by local governments in Spain between January 1984 and April 2016. The methodology used is multinomial logistic regression. Our results show evidence of a statistically significant association between the likelihood of specific firms securing (or not) the contracts, and the presence of a specific political party in government in the period before reforms. These significant relationships disappeared in the period after 2007, which may be an indication of how institutional reforms can weaken political connections. In this way, we contribute to the literature in this field of research by providing evidence to suggest bias in the awarding of contracts, depending on the governing political party in the municipality, and pointing to the effectiveness of institutional reforms in ending these practices.

The remainder of the paper is organized as follows. Section 2 describes several cases of political connections in contracting out local public services in Spain. Section 3 outlines the legal framework for the privatization of the urban water service in Spain, and the reforms passed in 2007 regarding procurement of public services and funding of political parties. Section 4 describes the data and the methodology. The results are presented in Section 5, and the final Section summarizes and sets some policy conclusions.

2. Political connections related to contracting of local public services in Spain.

When Spaniards these days are surveyed about Spain's problems, corruption is revealed to be a major concern (Schwab, 2016; EC, 2014). Suspicions of corruption and judicial investigations affect many areas of public policy and virtually all political parties that have held significant government positions in the last decades. Within this context, there are many cases of procurement under investigation by the Spanish judiciary for alleged bribery. A number of contracts are under judicial investigation, such as those relating to the *Gürtel Case*, the *Púnica Operation*, the *Pokemon Case* (also known as the *Bárceñas Case*)¹, among others. In all these cases, the investigations focus on major business groups that operate in Spain. For instance, in the investigation of the *Gürtel Case*, a judicial writ issued by the Spanish *Audiencia Nacional* –one of Spain's highest judicial bodies– (*Juzgado de Instrucción Central* 5; Writ of November 26, 2014:94–95), presents indicia that a concessionaire owned by *Fomento de Construcciones y Contratas* (FCC) and *SUFI Group* did pay commissions in exchange for local services contracts in the municipality of Majadahonda (Madrid), which was governed by the Popular Party (*Partido Popular* or PP).

Furthermore, within the investigation of the *Bárceñas Case*, it has been proven that large business groups supplied substantial amounts of money to the Popular Party. Between 2002 and 2009, FCC contributed €5.03 million to the Popular Party, making it the second largest donor after the public works company *Sacyr*, which contributed about €6 million.² José María Mayor Oreja, former president of FCC's construction division and brother of Jaime Mayor Oreja, minister in the Popular Party central government between 1996 and 2001,

¹ This case has been named the *Bárceñas Case* after Luis Bárceñas, who was Manager (1982-1987, 1993-2008) and later Treasurer (2008-2009) of the Popular Party, and also member of the Senate for this party (2004-2010). The Popular Party holds the central government in Spain, as well as most regional and local governments.

² See details in *Huffington Post*, 11 May 2014 (http://www.huffingtonpost.es/2014/11/05/hacienda-caso-barcenas_n_6108430.html); and *Europa Press*, 11 May 2014 (<http://www.europapress.es/nacional/noticia-barcenas-hacienda-cree-no-hay-correlacion-temporal-donaciones-pp-contratos-publicos-20141105165940.html>).

admitted before Judge Ruz (*Audiencia Nacional*, investigation into the *Bárcenas Case*) that he had made financial contributions to the Popular Party.³

Within the water distribution sector itself, numerous cases of alleged bribery have been subject to judicial investigation. Those cases have been frequent enough as to be the object of a report issued by Global Water Intelligence (GWI, 2013), which provides extensive information on judicial inquiries affecting the two major water distribution firms in Spain, namely, *Aqualia*⁴ and *Agbar*.⁵ Taken together, these two firms cover about 67 percent of the municipalities with private delivery of urban water (around 75 percent of the population served by private firms). Other minor firms have also been affected, such as *Emarsa* and *Aguas de Valencia*.

Finally, mention needs to be made of the common practice of revolving-doors between politics and big business in Spain, as documented by Castell & Trillas (2013:109–110). This practice refers to situations where politicians holding high positions in government are subsequently appointed as members of the Board of Directors of large firms that have regulatory or contractual relations with the government, after they have withdrawn from institutional political activities (Heyes, 2003). Within the context of this study, several former politicians of the Popular Party have been appointed as members of the Board of Directors of

³ See *El País*, 28 May 2013 (http://politica.elpais.com/politica/2013/05/28/actualidad/1369751484_277881.html).

⁴ *Aqualia* belongs to *Fomento de Construcciones y Contratas* (FCC), a group that used to be controlled by the Spanish Koplowitz family, until *Inmobiliaria Carso* (owned by the Mexican magnate Carlos Slim) bought a 25.6 percent ownership stake in FCC in late 2014 (FCC, 2015), thus becoming the major shareowner. In addition to providing water services to more than 850 Spanish municipalities, this holding company is also present in more than 50 countries, including China, Mexico, Portugal, the Czech Republic, Poland and Algeria.

⁵ *Agbar* (an abbreviation of *Aguas de Barcelona*) is a subsidiary of the French holding company, *Suez Environment*. It comprises over 150 companies and has around 13,000 employees, and provides water services not only in Spain but also in countries such as the United Kingdom, Mexico, China, Chile, Cuba, Colombia and Algeria. Moreover, this company operates under different names in different Spanish regions: *Aigües de Barcelona* in the metropolitan area of Barcelona and *Sorea* in the rest of Catalonia; *Aquanex* in Extremadura; *Aquara* in Aragon; *Aquarbe* in Cantabria, Basque Country and La Rioja; *Aquaona* in Castile-La Mancha and Castile and Leon; *Asturagua* in Asturias; *Canaragua* in the Canary Islands; *Hidralia* in Andalusia; *Hidraqua* in the Valencian Community; *Hidrobal* in the Balearic Islands; *Hidrogea* in Murcia; and, finally, *Viaqua* in Galicia.

FCC. In this vein, it is worth recalling that two prominent former members of the Popular Party were members of the FCC's Board at the end of 2014 (FCC, 2015:3). One was Marcelino Oreja Aguirre, minister in the Spanish government (1976-1980) and first Popular Party candidate elected to the European Parliament in the 1989 election. He was later appointed Commissioner of Transportation and Energy for the European Commission (1994-1999), a job which he was put forward for by the Popular Party.

The second was Gustavo Villapalos Salas, who had formerly been minister of Education, Culture, and Sports (1995-2001) in the regional government of Madrid, under the ruling of the Popular Party. It is also interesting to note that in 2001, Abel Matutes was appointed to the FCC Board of Directors just after being minister of foreign affairs in the Popular Party's first government (1996-2000). He was a member of that Board for most of the last decade. To our knowledge, there are no such political connections with former members of governments on the Boards of Directors of other firms in the urban water delivery sector; neither in *Agbar*⁶ –the other dominant firm–, nor in other firms with lesser market share.

3. Privatization of urban water management in Spain

3.1. Background and legal framework

In Spain, municipal governments are responsible for the urban water supply, and they can choose among different forms of service delivery, which are set out in the current legislation.⁷ First, the municipal government may choose to manage the service in-house (the government itself manages the service) or to externalize it. Externalization can be effected by means of transferring delivery to a government-owned company (public firm), or privatizing it. In case of the latter option, privatization can be either partial, by means of a mixed firm (institutional public-private partnership, PPP), or full, whereby the service is contracted out to a private firm (contractual public-private partnership).

⁶ Actually, five out of the seven members of *Agbar*'s Board of Directors are French. Its Executive President has never had any involvement in institutional activities.

⁷ The regulation of the management of municipal services in Spain is set out in Law 7/1985 on Local Government Regulations, and Law 57/2003 on the Modernization of Local Government.

After the entry into force of Law 7/1985 on Local Government Regulations, many Spanish municipalities decided to privatize the management of water services. Three decades after that Law was passed, Spain has one of the highest levels of private sector participation in the management of urban water of any OECD country, as a percentage of the population served. According to González-Gómez *et al.* (2014), in 23 percent of Spanish municipalities, urban water supply is delivered via one of the forms of private management referred to in the legal system. However, this percentage rises to 55 percent when expressed in terms of population. This is indicative of the concentration of the privatization process in the more populated municipalities.⁸ The main motivations for water privatization in Spain have been pragmatic and, to a lesser extent, ideological and political (González-Gómez *et al.*, 2011; Picazo-Tadeo *et al.*, 2012). These results align closely with those obtained in Bel & Fageda's (2009) meta-regression analysis to explain local privatization decisions.

According to the legislation in force, the bidding process for water services in Spain develops as follows. First, an announcement of the public tender of the contract is made, which includes the technical and economic conditions of the contract and the procedure and assessment criteria. Details are also given on the commitments that must be fulfilled by the private firm awarded the contract. In light of all that information, private firms place a first-price sealed-bid, in which bidders must submit their technical and financial proposal. Then, the municipal government awards the contract to the firm that made the best proposal with respect to a number of criteria.

The jury in charge of adjudicating the bids is headed by the mayor or any other city council member or public servant. In the first place, the jury determines whether the proposals fulfill the commitments required in the public tender, and offers non-complying firms a deadline of three days to amend rectifiable mistakes in their proposals. Second, it evaluates and scores the technical conditions offered by bidders admitted to the contest, which are included in the first-price sealed-bid and might refer to issues such as service quality, management or emergency plans in case of supply disruptions. Given the qualitative nature of

⁸ Partial privatization, by means of mixed firms, is also becoming increasingly common. Ownership is shared between the government, who usually retains ownership of a large fraction of the firm's capital and is expected to ensure the public interest, and the private partner, who has industry know-how and is often in charge of the day-to-day management (Warner & Bel, 2008, González-Gómez *et al.*, 2009).

some of these technical conditions, their assessment unavoidably requires some value judgments. As a third step, the financial conditions of each proposal –which include elements such as water tariffs and, occasionally, other proposals for infrastructure investment– are also scored. Finally, following a joint assessment of both technical and financial conditions, each bidder is awarded a final overall score, on which the decision is based.

3.2. Legal reforms in 2007 regarding procurement of public services, and funding of political parties.

In 2007, as mentioned in the Introduction, two laws were passed that changed the framework of relations between political parties, local governments and private companies. This new scenario affected local procurement, and financing of political parties. One is Law 30/2007 on Public Sector Contracts, and the other is Organic Law 8/2007 on the Financing of Political Parties. The former translates into the Spanish legal system Directive 2004/18/EC of the European Parliament and of the European Council of 31 March 2004, on the coordination of procedures for the awarding of contracts for public works, and supply of public services. The principles underlying the new rules are equality, transparency and confidentiality (Razquín, 2008). Three changes brought about by the new law are particularly relevant. The first one is the obligation to publish online all the information related to the bidding processes promoted by local governments, which makes the process more public and transparent. A second change affects the composition of the jury in charge of evaluating the bids. While the mayor was always the president of the jury before the new law, the new regulations stipulate that the president can be a member of the city council, or a public servant. Still more important, a third change limits the discretionary power of the jury: whenever the decision gave more importance to qualitative factors than to quantitative valuations automatically generated from the bidding clauses, Article 134.2 of the new law requires that the awarding reports must be reassessed by a committee formed by three external referees. Hence, the new regulation envisages the possibility of transferring to external referees the assessment of qualitative valuations (Moffa, 2009).

Organic Law 8/2007 of 4 July, on the Financing of Political Parties, replaced the old legal framework established in 1987. A notable aspect of the new law was the ban on political parties receiving donations from companies working for the public administration. A subsequent reform introduced in 2012 (Law 5/2012 of 22 October), extended the ban to companies belonging to the same group as those who work for the administration, or who are

controlled by them. This seeks to prevent the party in power from granting contracts or services in exchange for financial contributions.

4. Data and methodology

4.1. Variables, data and sources

In order to test the hypotheses stated in the Introduction, we use information from 922 privatizations of the urban water service that occurred in Spain between January 1984 and April 2016. Given that our aim is to shed some light on why local governments choose one particular firm over other alternatives, the first variable of interest in our research is the name of the firm to which the contract was awarded.

As already noted, private firms, either contractual or institutional PPPs, managed the urban water service in approximately 1,800 Spanish municipalities in 2016. It is worth noting that until 2008 there was no public register with information about contracting procedures of local services in Spain. As described in Section 3.2, from 30 April 2008, Law 30/2007 on Public Sector Contracts required local administrations to create an institutional webpage named *Contractor Profile*, which is aimed at ensuring transparency and affording public access to the information relating to the contractual activity of public administrations. Accordingly, from this date onwards, when a local government privatizes the management of a given service it must grant public access through the abovementioned webpage to all information related to the privatization. We have thus made use of this resource to collect information about privatizations taking place after Law 30/2007 was passed,⁹ and particularly the name of the firm awarded the contract for the urban water service provision.

In addition, we submitted postal or electronic requests to local councils that had privatized the service before that time, asking them for the date of the town council plenary session in which the decision to privatize was taken. We then referred to municipalities' *Official Gazettes* to obtain the name of the provider of the urban water service. Furthermore, in a few cases, we obtained this information directly from the web pages of the town councils. Taking these sources together, we collected information about 922 privatizations of the urban

⁹ Even so, some municipalities –particularly small ones– still do not have the *Contractor Profile* institutional webpage, which has caused additional difficulties in our data collection process.

water service in Spanish municipalities, which represent nearly 50 percent of total privatizations in the period of reference.¹⁰

For the purpose of our research, we have firstly established three possible options for the firm chosen to privatize the urban water service, namely, *Aqualia*, *Agbar*, and *Others*. The group *Others* includes all firms other than those included in the first two groups, e.g., firms that operate at national level such as *Acciona*, *Agua & Gestión*, *Gestagua*, *Hidrogestión*, *Urbaser* and *Valoriza*, in addition to some companies that, as mentioned, operate mainly at regional level, including *Aguas de Valencia*, *Facsa*, *Prodaisa* and *Espina & Delfin*.

In our sample, *Aqualia* was chosen to privatize the urban water service 314 times (34.1 percent), *Agbar* 308 times (33.4 percent), while firms included in the group *Others* were chosen 300 times (the remaining 32.5 percent) (*Table 1*). Furthermore, we can distinguish between the periods before and after the 2007 legal changes, in order to provide an initial description of the effect of reforms. The percentage of contracts awarded to big companies (*Aqualia* and *Agbar*) was larger in the period prior to the reform (1984-2006) and decreased in the period after the reform (2007-2016). The group of other companies, which was the one with the lowest percentage of contracts (23.2 percent) between 1984 and 2006, becomes the group with the highest share of contracts (45.8 percent) in the period 2007-2016. *Aqualia* secured 39 percent of contracts between 1984 and 2006, but just 27.1 percent in the following period. Similarly, *Agbar* was awarded 37.8 percent of contracts in the period prior to the reform, but just 27.1 percent in the period after the reform. Finally, *Table 1* also shows that the two biggest Spanish political parties, the Spanish Socialist Workers' Party (*Partido Socialista Obrero Español* or PSOE) and the Popular Party have both awarded more contracts to *Aqualia* than the average that this firm obtained all over Spain, while the opposite is true in the case of *Agbar*, to which PSOE, and particularly PP, have awarded a lower percentage of contracts than the share of contracts that *Agbar* has obtained all over Spain.

Please, insert Table 1 here

¹⁰ Despite the lack of a public register until recently, we estimate that in the period 1984-2006 around 1,350 privatizations of local water services took place in Spain, while between 2007 and 2016 the number of privatizations was approximately 450. Accordingly, the estimated representativeness of our sample was 85 and 40 percent before and after the legislative reforms passed in 2007, respectively.

These changes occurred during a period in which the water delivery service industry was highly concentrated, as described in Bel *et al.* (2013:379), where concentration ratios were compared between 2003 and 2009. The two biggest companies of the sector covered 69 percent of population in Andalusia and 91 percent in Catalonia, two of the most populated regions in Spain with private contracting practices. In 2009, these shares increased to 79 percent in the case of Andalusia and to 92 percent in Catalonia.¹¹ *Herfindahl-Hirschman* indices were also very similar in 2003 and 2009. Therefore, the increase in contracts awarded to other companies after the reforms cannot not apparently simply be explained by a change in the industry market structure unrelated to the policy evaluated.

Furthermore, note that changes between the periods before and after the reform are particularly large in the case of contracts awarded to *Aqualia* by municipal governments ruled by the big political parties. There is a difference of 21 percentage points between the two periods for PP –from 47.4 percent to 26.4 percent– and 13.5 percentage points for PSOE –from 43.9 percent to 30.4 percent. Smaller changes are found in the case of contracts awarded to *Agbar*, though percentages of contracts awarded by both PP and PSOE also diminished with respect to the period prior to the reform. All political parties awarded much larger percentages of contracts to other companies in the period 2007-2016.

In order to explain the choice of the firm selected to privatize the urban water service and test the hypotheses established in the Introduction, we have selected several variables relating to the policy framework, some features of the municipality, and also to the party in power of the local government at the time the decision was made. *Table 2* presents some basic statistics for these variables, while the *Appendix* summarizes their description and sources. Our first variable is *Reform 2007*, which is a policy variable intended to account for the influence of the legal reform implemented in 2007 regarding both public procurement of public contracts (Law 30/2007) and the financing of political parties (Organic Law 8/2007) on privatization choices. From a technical point of view, it should be noted, however, that this variable is only capable of controlling for a structural change between the

¹¹ Note that privatization policies in the water delivery service were almost non-existent in the case of Madrid, another highly-populated Spanish region.

two periods, before and after the 2007 reforms, meaning that our approach does not provide an estimate of causality.

Please, insert Table 2 here

A second set of control variables includes two market variables related to the municipality that privatizes the urban water service: *population*, measured as the number of inhabitants and taken from the Spanish Statistical Office (INE); and *economic activity*, measured by the indicator of economic activity in Spanish municipalities provided by La Caixa (2014). The third set of variables includes 16 geographical dummy variables that take the value 1 if the municipality belongs to the regions of *Andalusia, Aragon, Asturias, Balearic Islands, Basque Country, Canary Islands, Cantabria, Castile-La Mancha, Castile and León, Catalonia, Extremadura, Galicia, Madrid, Murcia, La Rioja* and the *Valencian Community*, respectively, and 0 otherwise.¹² These variables are used in order to capture the possible existence of regional unobservable patterns in the decision to privatize the urban water service or other unobservable features of the region that could affect the selection of the service provider.

Regarding the regional patterns observed in *Table 2*, *Aqualia* seems to do well in Andalusia while *Agbar* is overrepresented in Catalonia. There is a sharp difference between the market structures of water services in both regions; while nearly 13 per cent of Andalusian municipalities had the urban water service contracted out to a private firm in 2009, in Catalonia this figure raised up to 74 per cent (Bel *et al.*, 2013). Furthermore, the distribution of local power is also fairly different. According to data from 2011, Popular Party and PSOE had 34 and 48 per cent of the mayors in Andalusia, respectively; conversely, in Catalonia Popular Party had less than 1 per cent of mayors, and PSOE around 20 per cent. Finally, while ideology has been found to be a strongly influential factor in contracting out water service in Andalusia (Picazo-Tadeo *et al.*, 2012), with conservative local governments privatizing more frequently, available evidence for Catalonia indicates that ideology did not play a key role in contracting out water services (Miralles, 2009).

¹² In this regard, note that these dummies represent all Spanish regions but *Navarra* and the autonomous cities of *Ceuta* and *Melilla*, for which the sample has no observations.

Taking all abovementioned facts into account, our belief is that the strength of *Aqualia* in Andalusia is not related with PP being particularly strong, but rather to the fact that municipalities governed by this right-wing party tend to contract out water more frequently. Instead, the strength of *Agbar* in Catalonia would be explained by historical reasons; *Agbar* is the oldest player in the Spanish water sector, was created in 1867 to deliver water service in the city of Barcelona, capital of Catalonia, and has her headquarters in this city. Although empirical studies on the urban water service in other Spanish regions are scarcer, it is worth noting the case of the Valencian Community, where the overrepresentation of the group *Others* can be explained by the seniority in the area of a regional company, *Aguas de Valencia*, which has not expanded outside the region.

Finally, the political variables intended to capture the effect of the party in power in the local government are the following: *PSOE*, which is a dummy that takes the value 1 if the left-wing Spanish Socialist Workers' Party was in power when the decision to privatize was taken and 0 otherwise; and *PP*, which takes the value 1 if the right-wing Popular Party was ruling the local government at the time of privatization and 0 otherwise. In both cases the data come from the Spanish Ministry of Finance and Public Administration. In addition, we have included two further variables, namely *PSOE*Reform 2007* and *PP*Reform 2007*, computed as the interaction between the variables *PSOE* and *PP*, on the one hand, and the policy variable *Reform 2007*, on the other. These two variables are intended to test whether the reforms weakened (or not) political connections. Furthermore, *majority* is a dummy variable that takes the value 1 if the party in power held a majority when the decision to privatize was taken, and 0 otherwise; the number of city councilors defines this variable, with data sourced from the Spanish Ministry of Home Affairs. And finally, *continuity* is a dummy that takes of the value 1 if the decision to privatize was taken in the second or a subsequent term of office of the party ruling the town council.

4.2. A brief methodological note

In order to formalize the choice of the firm selected to privatize the urban water service, represented by the variable *Y*, and its determinants we use multinomial logit regression techniques (see Greene, 2012:763–766 for details). In particular, so as to identify the model, we compare the probability that municipality *i* selects firm *m* to privatize the urban water

service, where $m = Aqualia$ and $Agbar$, against the base category which is set to $Others$. In formal terms, our model is:

$$\ln \left[\frac{\text{Probability} (Y_i = \text{Firm } m)}{\text{Probability} (Y_i = \text{Firm } Others)} \right] = \alpha_m + \beta_m \text{policy variable} + \sum_{k=1}^K \delta_{mk} \text{market variables}_i + \sum_{h=1}^H \gamma_{mh} \text{regional variables}_i + \sum_{l=1}^L \phi_{ml} \text{political variables}_i$$

where *policy variable* is a dummy for the 2007 reform, while *market variables*, *regional variables* and *political variables* are different vectors of variables included in our models aimed at capturing features of the municipality and the party in power of the local government, as explained in Section 4.1.

This expression has been fitted by maximum likelihood using *Stata* software, with robust standard errors to account for the presence of heterogeneity in the sample. In addition, and provided that the coefficients from the multinomial logit do not have a direct interpretation, i.e., they are relative to the base outcome, we have computed the marginal effects that measure the effect of changing the value of each explanatory variable on the probability of observing a given outcome: *Aqualia*, *Agbar* or *Others*.

5. Results

The results for the estimated marginal effects of the explanatory variables included in our analysis are in *Table 3*. The model is jointly significant and the goodness-of-fit is high compared to other studies conducting logistic regressions. Coefficients for variables are presented grouped according to the classification mentioned above: *policy variable* (*Reform 2007*), *market variables* (*population* and *economic activity*), *regional variables* (dummy regional variables) and *political variables* (dummies for political party, either *PSOE* or *PP*, interactions between political parties and the policy variable, *majority* and *continuity*).

Please, insert Table 3 here

Our main variable used to assess the possible existence of a structural change produced by the 2007 reforms is the policy variable *Reform 2007*. Its associated coefficient is negative and statistically significant at the 5 percent confidence level for *Agbar*, but positive and statistically significant, also at 5 percent, for the group *Others*. This result indicates that the reform

was correlated with an increase in contracts awarded to the smaller companies at the expense of one of the larger groups, *Agbar*. The magnitude of the marginal effect is slightly lower in the former case than in the latter. This result constitutes our first evidence of how the reforms seem to have affected contracting choices.

Market variables *population* and *economic activity* are not significant at standard confidence levels in this first model.¹³ The estimated parameters for the set of regional variables reflects some regional unobservable patterns characterized by the greater relative presence of some companies in certain areas of Spain. This may be due to a business strategy phenomenon: companies that are the first to enter a particular area may have an advantage when it comes to business expansion in that area, whether due to their better understanding of the area, and/or due to an emulation effect, whereby municipalities tend to follow the choices of their neighbors.

The political variables *majority* and *continuity* are significant, in both cases at 5 percent, only for the contracts awarded to the group *Others*. Governments of political parties that enjoy a majority have a higher probability of choosing firms other than *Agbar* and *Aqualia*. Furthermore, governments that have been re-elected are less inclined to contract firms other than the two major ones. Perhaps the extended period spent in local government facilitates the creation of networks that ultimately promote the awarding of contracts to the major firms.¹⁴

¹³ As a result of the comments of one referee, we have also included in the multinomial logit regression the *square of population* as an additional explanatory variable, in order to test for the possible existence of non-linearities in the effect of population on the probability of choosing a given firm for the privatization of the urban water service. However, the estimated parameter for this variable is not significant at standard confidence levels in any cases, while the estimated parameters for the rest of variables in our models and their statistical significance remain unchanged. **Moreover, given the highly skewed distributions of the market variables we also tried logs rather than levels for population and economic activity. Results for the marginal effects of interest in our models do not change, except for the variable PP in column two, i.e., the marginal effect for Agbar, that now becomes significant at 10 per cent rather than at 5 per cent as in the model with levels.**

¹⁴ **In addition to our set of political variables, also following the suggestion from one referee, we have included in the multinomial regression four variables computed as the interactions between majority and continuity, on the one hand, and PP and PSOE, on the other. However, none of these variables was found to be statistically significant; moreover, including interactions even reduced the**

Beyond the reform of 2007, one of our aims is to analyze the role of political parties and their links to the big companies at the time when privatization took place, which allows us to test our hypothesis regarding how legal reforms weakened political connections. *Table 3* above shows some evidence related to the relationship between political parties and firms. In the case of *Agbar*, on the one hand, the marginal effects of variables *PSOE* and *PP* are negative and statistically significant at the 10 and 5 percent confidence levels, respectively. This result suggests that when one of these parties governs the municipality, the probability of *Agbar* being awarded the contract is lower; furthermore, the magnitude of the effect is slightly larger in the case of the Popular Party. Thus, *Agbar* seems to perform poorly compared to other companies in municipalities ruled by large political parties, especially in those ruled by the Popular Party. This is consistent with the actual evidence on political connections, given that *Agbar* is the main competitor of *Aqualia* and has not been officially involved with the Popular Party in rent-seeking activities or revolving doors, unlike the latter. On the other hand, we also find a positive and statistically significant (at 5 percent) relationship between the variable *PP* and *Aqualia*, indicating that when the Popular Party rules the municipality, the probability of *Aqualia* being awarded the contract increases by 13.1 percent. In addition, the estimated marginal effect for the variable *PP*Reform 2007* is negative and also statistically significant at the 10 percent confidence level, indicating that the passing of Law 30/2007 and Organic Law 8/2007 weakened this relationship.¹⁵

statistical significance of the variables *majority* and *continuity* in some of our estimations. These results might be indicating that what really matter is whether or not the political party ruling the municipality holds a majority of councillors and not the party they belong to, either PP or PSOE. In fact, political coalitions have historically been unusual in Spanish municipalities, where the most voted party normally rules the local government. According to these arguments, we have preferred to follow a *parsimony principle* by keeping our model specification as simple as possible.

¹⁵ In order to further investigate the relationship between the Popular Party and *Aqualia* and the effect of the 2007 reforms on that relationship we have also estimated a logistic regression for the probability of *Aqualia* being awarded the contract for the management of water services after a privatization tender. The estimated marginal effects, which are available on request, are fairly similar to those from the multinomial logistic regression, and unequivocally show how the probability of *Aqualia* being awarded the contract increases –in this case by 14.3 percent– when the Popular Party is ruling the local government. Besides, the marginal effect of the variable *PP*Reform 2007* is also negative and statistically significant at a confidence level of 5 percent, corroborating the notion that the political connection between the Popular Party and *Aqualia* weakened after the reforms.

Furthermore, we have separately estimated two additional multinomial regressions for the periods 1984-2006, before the implementation of the 2007 reform, and 2007-2016, after the passing of Law 30/2007 and Organic Law 8/2007. The results obtained show, once again, that the Popular Party is positively associated with *Aqualia* (at 5 percent significance level) in the period prior to the reform and negatively associated with *Agbar* (in this case, at a confidence level of 1 percent), its main competitor (*Table 4*). However, this relationship disappears if the sample considers only the contracts awarded in the period after the reform, i.e., between 2007 and 2016 (*Table 5*). Accordingly, the probability of *Agbar* being awarded the contract for the management of urban water services between 1984 and 2006 was 19.8 percent lower when the Popular Party governed the municipality. In contrast, the probability of *Aqualia* being awarded the contract was 15.2 percent higher with a local government ruled by the Popular Party. After the reforms of 2007, as mentioned, no specific relationship is identified in terms of statistical significance between political parties ruling the local government and firms awarded contracts.

Moreover, a change in the patterns of the regional marginal effects is also observed between periods 1984-2006 and 2007-2016, mostly consisting of an increase after the 2007 reform of the probability of contracts awarded to firms in the group *Others* in all regions, in detriment of the two larger firms *Aqualia* and *Agbar*. Although these changes have no easy interpretation, in our opinion, they might be related to the fact that reforms carried out 2007, which affected all Spanish regions equally by introducing transparency and reducing discretionary power in contracting out public services, fostered a convergence in the regional patterns of contracting out. Also, they could be interpreted in the context of a recent ideological movement worldwide, with high impact on media, against privatization and the control of the urban water service by large multinationals. In this context, once privatization has been decided, local governments could prefer contracting out with regional companies in order to reduce the opposition of citizens.

Please, insert Tables 4 and 5 here

Finally, we have implemented a couple of additional tests aimed at further checking the robustness of the abovementioned results. On the one hand, we carried out several falsification tests substituting the *real* reform implemented in 2007 with some placebo reforms,

as if the regulatory changes had occurred at other previous points in time. Unlike the variables representing the interaction between political parties and the *real* reform, we expect interaction with these placebo variables not to be statistically significant. Results from this robustness test, which replicates the methods and specifications considered so far, are presented in *Table 6*; for the sake of simplicity, it only displays the estimated coefficients for our variables of interest in the case of the multinomial regression. Results are satisfactory, in that they show that only the *real* reform produces a statistically significant decrease in the contracting relationship between the Popular Party and *Aqualia*, underlining the reforms' impact on political connections.¹⁶

Please, insert Table 6 here

On the other hand, we also run a regression with year fixed effects considering the whole period of analysis (1984-2016) replacing the policy dummy variable. The year not included in the model that acts as benchmark by which to interpret the rest of the year specific dummies is 2007, the year of the reforms. Our results for this analysis are presented in *Table 7*, which only provides information regarding coefficients of these year-specific fixed effects and coefficients associated with political variables. Note, however, that the rest of the regressors –as well as all the other year dummies– were also included in the regression. Results show a sharp change in the marginal effects for *Aqualia* after 2007. The coefficients of years 2008 and 2009 are large, negative and statistically significant, indicating that *Aqualia* suffered a reduction in the probability of being awarded a water distribution contract in the first two years after the reform. In contrast, *Agbar* saw an increase in this probability in the same period. Moreover, the coefficient of the binary variable indicating whether the Popular Party rules the government remains positive and statistically significant for *Aqualia*, and negative and statistically significant for *Agbar*.

Please, insert Table 7 here

¹⁶ Results from the falsification tests in the logistic regression for *Aqualia* also show how the only reform that debilitates the relationship between the Popular Party and *Aqualia* in awarding contracts is the *real* one. These results are also available on request.

Results from all these robustness tests provide further evidence to support the conclusions of our research. The reform made the market for contracting out more transparent and competitive, and both big companies (*Aqualia* and *Agbar*) lost market share with respect to the others. However, apparently only *Aqualia* experienced a systematic loss of the contracts that it had been receiving from the Popular Party before 2007; in the case of *Agbar*, the decrease in the number of contracts was not linked to any connection to a particular political party.

Are the relationships found in our empirical analysis between political parties and water distribution firms mere coincidence? Or, on the contrary, are they the result of favoritism or discrimination stemming from firms' different behavior with respect to funding political parties and/or revolving-doors practices? While there is no publicly-available evidence that irrefutably points to a causal link, it is public knowledge that FCC, the holding company of the water distribution firm showing a significant association with water service concessions made by PP-governed municipalities, has been the second biggest donor to that party in the past decade.¹⁷ Moreover, several major Popular Party politicians have come to occupy seats on the FCC Board of Directors after leaving their institutional responsibilities, as described in Section 2. Conversely, the company *Agbar*, which showed a significant negative association with the concessions for water services granted by PP-governed municipalities, is not among the list of donors to the Popular Party, nor were prominent members of the PP appointed to its Board of Directors.

Of course, showing favoritism to particular firms in local concessions can be the result of atomized decisions by local governments seeking rents or other compensation. In fact, cases under judicial review in Spanish provinces such as A Coruña, Asturias or Huelva involve municipalities governed by different political parties, within each province. But beyond these isolated, atomized decisions, our results provide evidence that may well suggest that

¹⁷ We thank a referee for pointing out that a donation of €5.03 million over seven years is a small amount of money relative to the potential size of the contracts involved. Along these lines, Tullock (1972:355) argued that, given that there is little money in politics considering the value of public policies at stake '...the amount of influence that can be purchased by this method is small'. This view has received empirical support in studies such as Ansolabehere *et al.* (2003) (see Stratmann, 2005 for a deeper discussion). We should also recall, however, that the amounts of money in Spanish politics are relatively small compared, for instance, to US politics; by way of example, the Popular Party spent a total of €22.7 million in the 2008 national election campaign.

higher-level decisions based on the company's political connections and political party funding at the national level might have played a significant role in the awarding of water concessions in Spain over the last three decades. Furthermore, our results also suggest that legal reforms enacted in 2007, aimed at improving public procurement and the financing of political parties, weakened favoritism. Further research on these issues is definitely needed.

6. Summary, conclusions and policy implications

Contracting out of public services is an area of public policy in which political rent-seeking and favoritism are believed to be relatively common. If that is in fact the case, eradicating such practices through legal reforms to weaken political connections would undoubtedly be in the public interest. However, a problem associated with the adoption of remedial measures is the lack of precise knowledge of the extent of these practices; since these are illegal or irregular practices, they are systematically hidden.

In this research, we evaluate legal reforms aimed at weakening the existence of potential relationships between political parties in governments that award contracts, and private firms that secure these contracts. The context of our study is the widespread concern over corruption and favoritism in Spain, where many cases of public services procurement are subject to judicial investigations, and the 2007 reforms of public sector contracting and the financing of political parties. We sought to understand whether the apparent biases in favor of a specific firm –taken as a proxy for favoritism (or the opposite, in cases of negative bias)– are only isolated events or, conversely, whether they might be part of a more complex network of decision-making aimed either at financing political parties, and/or rewarding firms' political connections. In order to shed more light on this possibility, we look for statistically significant relationships between political parties in local government and firms awarded contracts for provision of public services, which could suggest systematic favorable (or contrarian) treatment. Moreover, we analyze how legal reforms might affect and potentially weaken these systematic relationships.

The results we have obtained, which are robust to different model specifications and statistical treatments, could be taken as evidence of political favoritism shown by a political party to one of the leading business groups with interests in the water industry. City councils

governed by the Popular Party were more likely to award the service contract to the company *Aqualia*, and were also less likely to award it to *Agbar* –*Aqualia*'s main competitor. Our results are consistent with the facts that, as proven in judicial investigations, the owner of *Aqualia* –*Fomento de Construcciones y Contratas* (FCC)– was the second largest donor of funds to the Popular Party between 2002 and 2009. On the contrary, neither *Agbar* nor its owner company –*Suez Environment*– have appeared in the lists of donors to the Popular Party. Furthermore, it is publicly known that several politicians that enjoyed high positions of office, including national ministries and regional ministries, in Popular Party governments, have regularly occupied positions on the Board of Directors of *Fomento de Construcciones y Contratas* (after leaving institutional office), whereas no former national minister or regional minister –whether from the Popular Party or the Spanish Socialist Workers' Party– has been a member of the Board of Directors of *Agbar* or *Suez Environment* in the period we study. More interestingly, our results also suggest that this systematic relationship weakened after the legal reforms carried out in 2007, which aimed to ensure a more transparent and open contracting process.

The abovementioned results can be interpreted, in our opinion, as evidence supporting the need for changes to the regulatory and institutional framework to weaken political connections. In the case of Spain, these reforms were in the public interest, intended to erode connections between political parties and firms. Our results were indeed consistent with perceptions of corruption shown by indicators developed by Transparency International (Transparency International, 2014) and the RAND Corporation (Stanley *et al.*, 2014). Improving the regulation of political parties' funding, as well as delivering faster and tougher sanctions in proven cases of corruption, could further reduce the temptation to engage in illegal practices. Additionally, ensuring greater transparency in public procurement processes, and building more effective mechanisms to monitor the contracting process, as in the case studied, would make it more difficult to engage in favoritism (or discrimination) when awarding public contracts. Of course, governments and legislators are responsible for introducing measures that aim to achieve such improvements.

Furthermore, it is also our belief that these policy implications are of particular relevance for those policymakers that tend to positively value cooperation between the public and private sector in the delivery of public services. In fact, suspicion of political favoritism and corruption has been one of the key drivers of remunicipalization of local services in the

past; and is also a factor in the current wave of remunicipalization spreading across several countries, particularly in Europe. Making favoritism in public procurement more difficult to engage in, and thus less common, might well be a good way to reduce pressure in favor of remunicipalization, thus helping to preserve cooperation between public and private actors as a tool for public sector reform.

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Table 1 – Contracts awarded by firm, period* and political party ruling the local government: Frequencies in the sample.
(Number of cases and percentages).

Firm	PSOE			PP			Other political parties			ALL political parties		
	TOTAL period	Before reform	After reform	TOTAL period	Before reform	After reform	TOTAL period	Before reform	After reform	TOTAL period	Before reform	After reform
<i>Aqualia</i>	156 (39.6%)	118 (43.9%)	38 (30.4%)	110 (35.4%)	63 (47.4%)	47 (26.4%)	48 (22.1%)	29 (21.2%)	19 (23.8%)	314 (34.1%)	210 (39.0%)	104 (27.1%)
<i>Agbar</i>	123 (31.2%)	88 (32.7%)	35 (28.0%)	75 (24.1%)	36 (27.1%)	39 (21.9%)	110 (50.7%)	80 (58.4%)	30 (37.5%)	308 (33.4%)	204 (37.8%)	104 (27.1%)
<i>Others</i>	115 (29.2%)	63 (23.4%)	52 (41.6%)	126 (40.5%)	34 (25.5%)	92 (51.7%)	59 (27.2%)	28 (20.4%)	31 (38.7%)	300 (32.5%)	125 (23.2%)	175 (45.8%)
<i>ALL firms</i>	394 (100%)	269 (100%)	125 (100%)	311 (100%)	133 (100%)	178 (100%)	217 (100%)	137 (100%)	80 (100%)	922 (100%)	539 (100%)	383 (100%)

Source: Authors.

* Total period: 1984-2016; before reform: 1984-2006; after reform: 2007-2016.

Table 2 – Sample description: Explanatory variables by firm group.

	<i>All</i>		<i>Aqualia</i>		<i>Agbar</i>		<i>Others</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
<i>Market variables</i>								
Population (<i>inhabitants</i>)	17,298.3	35,126.2	18,993.5	34,612.3	19,980.4	42,531.0	13,137	26,103
Economic activity (<i>no dimension</i>)	29.47	76.62	30.96	71.49	36.19	96.60	22.43	56.32
<i>Regional variables (dummies)</i>								
Andalusia	0.233	-	0.382	-	0.178	-	0.133	-
Aragon	0.024	-	0.013	-	0.029	-	0.030	-
Asturias	0.020	-	0.029	-	0.032	-	0.000	-
Balearic Islands	0.011	-	0.013	-	0.003	-	0.020	-
Basque Country	0.006	-	0.006	-	0.013	-	0.000	-
Canary Islands	0.018	-	0.022	-	0.029	-	0.003	-
Cantabria	0.030	-	0.016	-	0.019	-	0.057	-
Castile-La Mancha	0.155	-	0.197	-	0.101	-	0.167	-
Castile and Leon	0.057	-	0.063	-	0.097	-	0.016	-
Catalonia	0.158	-	0.067	-	0.289	-	0.120	-
Extremadura	0.059	-	0.073	-	0.049	-	0.053	-
Galicia	0.057	-	0.025	-	0.065	-	0.083	-
Madrid	0.002	-	0.000	-	0.000	-	0.007	-
Murcia	0.034	-	0.041	-	0.029	-	0.030	-
La Rioja	0.006	-	0.013	-	0.003	-	0.003	-
Valencian Community	0.124	-	0.038	-	0.062	-	0.277	-
<i>Political variables (dummies)</i>								
PSOE	0.427	-	0.497	-	0.399	-	0.383	-
PP	0.337	-	0.350	-	0.243	-	0.420	-
Majority	0.667	-	0.659	-	0.640	-	0.703	-
Continuity	0.683	-	0.710	-	0.691	-	0.647	-

Table 3 – Multinomial logistic regression: Estimated marginal effects, 1984-2016.

	<i>Aqualia</i>	<i>Agbar</i>	<i>Others</i>
<i>Policy variable</i>			
Reform 2007	0.0124 (0.0655)	-0.1400 (0.0602)**	0.1276 (0.0562)**
<i>Market variables</i>			
Population	1.58e-07 (1.5e-06)	2.4e-06 (1.6e-06)	-2.5e-06 (2.5e-06)
Economic activity	0.0001 (0.0007)	-0.0007 (0.0007)	0.0007 (0.0011)
<i>Regional variables</i>			
Andalusia	0.0001 (0.1210)	-0.2299 (0.1276)*	0.2299 (0.1884)
Aragon	-0.2903 (0.1592)*	-0.0342 (0.1528)	0.3246 (0.2007)
Asturias	1.0361 (0.1597)***	1.1406 (0.1640)***	-2.1767 (0.2236)***
Balearic Islands	-0.0837 (0.1229)	-0.4563 (0.2361)*	0.5400 (0.2182)**
Basque Country	0.9646 (0.2019)***	1.1772 (0.1983)***	-2.1418 (0.2410)***
Cantabria	-0.3053 (0.1529)**	-0.2320 (0.1578)	0.5274 (0.1985)***
Castile-La Mancha	-0.0651 (0.1239)	-0.2307 (0.1312)*	0.2958 (0.1871)
Castile and Leon	-0.0889 (0.1350)	0.0862 (0.1415)	0.0027 (0.2063)
Catalonia	-0.3366 (0.1279)***	0.0272 (0.1303)	0.3194 (0.1943)
Extremadura	-0.1026 (0.1306)	-0.1949 (0.1384)	0.2976 (0.1931)
Galicia	-0.3867 (0.1410)***	-0.0821 (0.1390)	0.4688 (0.1929)**
Madrid	-1.5747 (0.1756)***	-1.6180 (0.1812)***	3.1927 (0.2695)***
Murcia	-0.1294 (0.1392)	-0.2144 (0.1458)	0.3438 (0.2002)*
La Rioja	0.0875 (0.2124)	-0.2434 (0.2468)	0.1559 (0.2840)
Valencian Community	-0.3745 (0.1310)***	-0.2185 (0.1344)	0.5930 (0.1877)***
<i>Political variables</i>			
PSOE	0.0620 (0.0553)	-0.0913 (0.0508)*	0.0293 (0.0506)
PP	0.1317 (0.0635)**	-0.1524 (0.0606)**	0.0207 (0.0571)
PSOE*Reform 2007	-0.0899 (0.0806)	0.1040 (0.0778)	-0.0142 (0.0723)
PP* Reform 2007	-0.1417 (0.0825)*	0.1053 (0.0804)	0.0365 (0.0732)
Majority	-0.0461 (0.0332)	-0.0205 (0.0325)	0.0665 (0.0327)**
Continuity	0.0507 (0.0346)	0.0229 (0.0334)	-0.0736 (0.0296)**
Observations		922	
Log likelihood		-851.50	
LR Chi-squared		4,517.56***	
Pseudo R-squared		0.159	

Note: Standard errors robust to heteroskedasticity in brackets; *, ** and *** mean statistical significance at 10, 5 and 1 percent, respectively.

Table 4 – Multinomial logistic regression: Estimated marginal effects 1984-2006.

	<i>Aqualia</i>	<i>Agbar</i>	<i>Others</i>
<i>Market variables</i>			
Population	1.1e-06 (2.0e-06)	4.2e-06 (2.1e-06)***	-5.4e-06 (1.9e-06)***
Economic activity	-0.0004 (0.0009)	-0.0015 (0.0010)	0.0020 (0.0007)***
<i>Regional variables</i>			
Andalusia	0.0490 (0.1481)	-0.0959 (0.1447)	0.0469 (0.1680)
Aragon	-0.2253 (0.2782)	0.1733 (0.2350)	0.0519 (0.2472)
Asturias	1.0010 (0.2125)***	1.2398 (0.2094)***	-2.2409 (0.2341)***
Balearic Islands	0.0253 (0.2285)	-0.2890 (0.2692)	0.2637 (0.2088)
Basque Country	0.9572 (0.3007)***	1.2639 (0.2544)***	-2.2212 (0.2514)***
Cantabria	-0.0931 (0.2167)	-0.1928 (0.2259)	-0.2859 (0.1942)
Castile-La Mancha	0.0877 (0.1578)	-0.0882 (0.1559)	0.0005 (0.1738)
Castile and Leon	0.1174 (0.1868)	0.1023 (0.1893)	-0.2198 (0.2440)
Catalonia	-0.2019 (0.1539)	0.1192 (0.1481)	0.0827 (0.1735)
Extremadura	-0.0066 (0.1617)	-0.0830 (0.1603)	0.0896 (0.1733)
Galicia	-0.3070 (0.1753)*	0.0877 (0.1639)	0.2192 (0.1768)
Madrid	-1.5400 (0.2363)***	-1.5326 (0.2271)***	3.0726 (0.3149)***
Murcia	-0.0285 (0.1682)	-0.0702 (0.1658)	0.0987 (0.1878)
La Rioja	1.9102 (0.2458)***	-3.0720 (0.2299)***	1.1618 (0.2341)***
Valencian Community	-0.1922 (0.1654)	-0.1208 (0.1615)	0.3130 (0.1719)*
<i>Political variables</i>			
PSOE	0.0997 (0.0609)	-0.1305 (0.0562)**	0.0307 (0.0468)
PP	0.1527 (0.0719)**	-0.1986 (0.0680)***	0.0459 (0.0549)
Majority	-0.0120 (0.0434)	-0.0036 (0.0429)	0.0157 (0.0378)
Continuity	0.0177 (0.0481)	0.0001 (0.0466)	-0.0178 (0.0388)
Observations		539	
Log likelihood		-511.96	
Pseudo R-squared		0.115	

Note: Standard errors robust to heteroskedasticity in brackets; *, ** and *** mean statistical significance at 10, 5 and 1 percent, respectively.

Table 5 – Multinomial logistic regression: Estimated marginal effects 2007-2016.

	<i>Aqualia</i>	<i>Agbar</i>	<i>Others</i>
<i>Market variables</i>			
Population	-2.1e-06 (1.5e-06)	-1.6e-06 (2.2e-06)	3.8e-06 (2.0e-06)*
Economic activity	0.0017 (0.0009)*	0.0020 (0.0012)*	-0.0037 (0.0013)***
<i>Regional variables</i>			
Andalusia	-1.0112 (0.1466)***	-1.5868 (0.1912)***	2.5981 (0.1734)***
Aragon	-1.3615 (0.1704)***	-1.3742 (0.1950)***	2.7358 (0.1710)***
Asturias	0.0323 (0.1235)	-0.0363 (0.1307)	0.0039 (0.1066)
Balearic Islands	-0.3969 (0.2352)*	-3.7898 (0.3130)***	4.1867 (0.2830)***
Basque Country	-0.0226 (0.1482)	0.0100 (0.2361)	0.0125 (0.1898)
Cantabria	-1.4581 (0.1787)***	-1.4451 (0.1927)***	2.9032 (0.1671)***
Castile-La Mancha	-1.2208 (0.1461)***	-1.5185 (0.1815)***	2.7393 (0.1628)***
Castile and Leon	-1.2593 (0.1611)***	-1.1795 (0.1935)***	2.4389 (0.2015)***
Catalonia	-1.5087 (0.1744)***	-1.1819 (0.1947)***	2.6907 (0.1801)***
Extremadura	-1.1971 (0.1720)***	-1.4554 (0.2092)***	2.6526 (0.1938)***
Galicia	-1.4082 (0.1747)***	-1.4903 (0.1950)***	2.8986 (0.1700)***
Madrid	-2.6497 (0.2934)***	-2.9092 (0.3437)***	5.5589 (0.3236)***
Murcia	-0.3872 (0.2400)	-3.7867 (0.3206)***	4.1739 (0.2883)***
La Rioja	0.1048 (0.1649)	-0.0673 (0.1830)	-0.0375 (0.1396)
Valencian Community	-1.5626 (0.1671)***	-1.5075 (0.1850)***	3.0701 (0.1474)***
<i>Political variables</i>			
PSOE	-0.0264 (0.0595)	0.0617 (0.0783)	-0.0353 (0.0711)
PP	0.0022 (0.0607)	0.0316 (0.0810)	-0.0338 (0.0721)
Majority	-0.0950 (0.0482)**	-0.0480 (0.0476)	0.1430 (0.0532)***
Continuity	0.1101 (0.0464)**	0.0653 (0.0464)	-0.1754 (0.0475)***
Observations		383	
Log likelihood		-307.89	
Pseudo R-squared		0.245	

Note: Standard errors robust to heteroskedasticity in brackets; *, ** and *** mean statistical significance at 10, 5 and 1 percent, respectively.

Table 6 – Falsification tests. Multinomial regressions with placebo reforms: Estimated marginal effects for *Aqualia*, 1984-2016.

	<i>Aqualia</i>
<i>Real reform variables</i>	
PSOE*Reform 2007	-0.0899 (0.0806)
PP*Reform 2007	-0.1417 (0.0825)*
<i>Selected placebo variables</i>	
PSOE*Reform 2000	-0.0143 (0.0860)
PP*Reform 2000	-0.0096 (0.1018)
PSOE*Reform 2003	0.0087 (0.0807)
PP*Reform 2003	-0.0561 (0.0874)
PSOE*Reform 2005	-0.0253 (0.0789)
PP*Reform 2005	-0.0787 (0.0828)

Note: Standard errors robust to heteroskedasticity in brackets; * and ** mean statistical significance at 10 and 5 percent, respectively.

Table 7 – Multinomial logistic regression: Year fixed estimated marginal effects 1984-2016.

	<i>Aqualia</i>	<i>Agbar</i>	<i>Others</i>
<i>Selected year fixed effects</i>			
2001	0.1684 (0.1024)*	0.2219 (0.1228)*	-0.3904 (0.1370)***
2002	0.1579 (0.0904)*	0.2024 (0.1086)*	-0.3604 (0.1010)***
2003	0.2005 (0.1001)**	0.0739 (0.1188)	-0.2744 (0.1037)***
2004	-0.0313 (0.0972)	0.2522 (0.1078)**	-0.2209 (0.0869)***
2005	-0.0135 (0.1014)	0.2084 (0.1135)*	-0.1949 (0.1126)*
2006	-0.1659 (0.0976)*	0.1826 (0.1107)*	-0.0167 (0.0888)
2008	-0.4392 (0.1812)**	0.3347 (0.1264)***	0.1044 (0.1074)
2009	-0.1363 (0.0804)*	0.2433 (0.0914)***	-0.1069 (0.0753)
2010	0.0523 (0.0732)	0.0161 (0.0939)	-0.0684 (0.0737)
2011	0.0281 (0.0833)	-0.0188 (0.1032)	-0.0092 (0.0807)
2012	-0.1511 (0.0839)*	0.1471 (0.0986)	0.0039 (0.0780)
2013	-0.0906 (0.0840)	0.0339 (0.1002)	0.0567 (0.0772)
<i>Political variables</i>			
PSOE	0.0678 (0.0495)	-0.0907 (0.0506)*	0.0229 (0.0498)
PP	0.1125 (0.0577)*	-0.1326 (0.0602)**	0.0200 (0.0584)
PSOE*Reform 2007	-0.0583 (0.0702)	0.0809 (0.0735)	-0.0226 (0.0676)
PP*Reform 2007	-0.0616 (0.0719)	0.0487 (0.0768)	0.0128 (0.0695)
Majority	-0.0542 (0.0314)*	-0.0178 (0.0314)	0.0721 (0.0317)**
Continuity	0.0405 (0.0317)	0.0364 (0.0317)	-0.0769 (0.0287)***
Observations		922	
Log likelihood		-772.92	
Pseudo R-squared		0.236	

Note: Standard errors robust to heteroskedasticity in brackets; *, ** and *** mean statistical significance at 10, 5 and 1 percent, respectively. This model also includes regional fixed effects and control variables population and economic activity, as well as the rest of the year fixed effects, which are not displayed in the Table.

Appendix – Variables: Description and sources.

Variable	Description	Source
<i>Dependent variable</i>		
Firm awarded the contract in the privatization contest	Name of the firm to which the contract to manage the urban water service is awarded: either <i>Aqualia</i> (1), <i>Agbar</i> (2) or <i>Others</i> (3)	Own elaboration
<i>Policy variable</i>		
Reform 2007	Dummy variable that takes the value 1 for privatizations occurring before the passing of Organic Law 8/2007 and Law 30/2007, regarding the financing of political parties and procurement of public contracts, respectively; and 0 otherwise	Own elaboration
<i>Market variables</i>		
Population	Number of inhabitants in the municipality	Spanish Statistical Office (INE)
Economic activity	Indicator of economic activity computed at the municipal level using information from the Spanish Business Activities Tax (IAE in its Spanish acronym)	La Caixa (2014)
<i>Regional variables</i>	16 geographical dummy variables that take the value 1 if the municipality belongs to the regions of <i>Andalusia</i> , <i>Aragon</i> , <i>Asturias</i> , <i>Balearic Islands</i> , <i>Basque Country</i> , <i>Canary Islands</i> , <i>Cantabria</i> , <i>Castile-La Mancha</i> , <i>Castile and Leon</i> , <i>Catalonia</i> , <i>Extremadura</i> , <i>Galicia</i> , <i>Madrid</i> , <i>Murcia</i> , <i>La Rioja</i> and the <i>Valencian Community</i> , respectively; and 0 otherwise	Own elaboration

Variables: description and sources. *Continued.*

Variable	Description	Source
<i>Political variables</i>		
PSOE	Dummy variable that takes the value 1 if the left-wing Spanish Socialist Workers' Party (PSOE in its Spanish acronym) was in power at the time of privatization; and 0 otherwise	Spanish Ministry of Finance and Public Administration
PP	Dummy variable that takes the value 1 if the right-wing Popular Party (PP in its Spanish acronym) was in power at the time of privatization; and 0 otherwise	Spanish Ministry of Finance and Public Administration
Majority	Dummy variable that takes the value 1 if the party in power held a majority when the decision to privatize was taken; and 0 otherwise. This variable is defined by the number of city councilors	Spanish Ministry of Home Affairs
Continuity	Dummy variable that takes the value 1 if the decision to privatize was taken in the second or a subsequent term of office of the party ruling the town council; and 0 otherwise	Spanish Ministry of Home Affairs