

Legislative reforms and market dynamics in the provision of urban water service by private contract operators in Spain

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ABSTRACT. This paper studies the dynamics of concentration in the Spanish market for the provision of urban water service by private contract operators in the 2000-2020 period. The market is highly concentrated. Concentration increased until 2007, at which point it started to decline when Law 30/2007 on Public Sector Contracts and Organic Law 8/2007 on Political Party Financing were passed; before rising again from 2016 onwards. This latter trend results from strategic behaviour by the two leading operators, acquiring smaller companies with a notable presence in some regional markets. Further legislative reforms aimed at safeguarding space for competition are thus proposed.

KEY WORDS. Corporate operations; legislative reforms; market concentration; Spain; urban water service.

JEL CLASSIFICATION. D49; G18; L33; L95.

1. Introduction and motivation

Urban water supply is a service of general interest that affects a good essential for life, the consumption of which generates positive externalities (United Nations, 2019); in addition, its production involves high sunk costs that benefit from economies of scale. In many developed economies, due to these characteristics, this service is provided by public monopolies insulated from competition and market forces (Ballance and Taylor, 2005).

The need to ensure the principles of universality and affordability, which have mainly been met in developed countries but not developing economies (see, e.g., Narzetti and Marques, 2021), helps to explain why in many countries the water industry has been left aside in the privatization, liberalization, and deregulation efforts that began in the 1980s in the United States and the United Kingdom. Globally, urban water service is one of the most regulated economic activities and is subject to government ownership and intervention (OECD, 2016). Only a few countries (notably, England and Wales in the United Kingdom, and the Czech Republic) have entirely privatized the service, which has also required substantial economic regulatory capacity. Other countries, such as France, Italy and Spain, have opted for different management formulas that enable a combination of public provision with private delivery. Indeed, Spain is one of the developed economies with a prominent presence of private enterprise in the water industry; private companies and mixed management companies together provide urban water service to 55% of the Spanish population (AEAS, 2020).

Recently, the National Commission for Markets and Competition (CNMC by its initials in Spanish), which is the body in charge of promoting and ensuring the proper functioning of the markets in Spain, published a study on urban water and sanitation services that points to the need for major reforms to improve the efficiency of service provision (CNMC, 2020). In particular, it recommends fostering competition in the private segment of the industry and suggests two avenues for doing so. The first is for an independent body to carry out comparative analyses of performance. Such studies are not currently carried out in Spain at the national level, essentially due to a lack of transparency and

information about the activity of companies in the sector; furthermore, there are no independent bodies like those in other developed countries, some of which even have regulatory powers over the sector.¹

The second avenue is promoting competition in tendering processes. Since it is a service provided on a monopoly basis during the concession period, competition can only be introduced in the public tenders where the decision to award the contract is taken. However, the CNMC questions whether the conditions are in place to guarantee competition *for the market*, with the lack of transparency in the tenders being the main handicap. There is often no real knowledge of the state of the infrastructure, which makes it difficult for potential tenderers to estimate the profitability of the service.² In most public tenders for contract renewal, the incumbent tends to have certain advantages when it comes to such knowledge. In addition, potential tenderers may not receive information on the public tender when the contract comes up for renewal. On top of all this, companies in the sector sometimes decide not to submit a tender due to the low expected profitability of the business, especially in small municipalities.

Lack of competition *for the contract* and the trend towards greater market concentration may limit the benefits of private enterprise participation in the water industry. In this regard, there has been a trend of rising market concentration in the European countries with the highest degree of private participation (Guinea and Erixon, 2019). However, the

¹ There are some regional water agencies, such as the Catalan Water Agency (ACA), that track and monitor the market. Their remit is generally limited and their activity centres on pre-potable water and water for agricultural use; however, the ACA is involved in adjusting urban water tariffs.

² In this regard, the *Local Infrastructure and Equipment Survey*, published by the Ministry of Territorial Policy, provides information on the state of infrastructure for the provision of local services in Spain. This source of data has, however, two important shortcomings. On the one hand, it only covers municipalities with a population of less than 50,000, and in practice not all of them take part in the survey. On the other hand, the information provided is not sufficiently comprehensive for bidders in public tenders for urban water service to have detailed knowledge of the state of the infrastructure.

literature contains little empirical analysis of the degree of concentration and competition in the sector and the dynamics thereof, as seen in the reviews by Cetrulo et al. (2019) and Lima et al. (2021), to name a few examples.

Against this backdrop, the objective of this paper is to study the dynamics of the concentration in the private segment of the Spanish urban water market after the enactment in 2007 of Law 30/2007 on Public Sector Contracts and Organic Law 8/2007 on the Financing of Political Parties. These two legislative initiatives were aimed, respectively, at promoting competition in tenders for the provision of public services and at decoupling public contracts from the financing of political parties. A database was prepared to achieve this research objective including information for the 2000-2020 period, and a series of concentration indicators are calculated at the national and regional levels. The findings suggest that one of the results of the aforementioned regulatory changes is that they fostered competition *for* the market by reducing the levels of concentration. That said, the big companies in the sector (AGBAR and Aqualia) have reacted by buying other operators that are smaller but have a notable presence in some regions. This strategy has curbed the trend towards a less concentrated market, undermining the effectiveness of the legislative changes introduced in 2007.

Following this introduction, Section 2 describes the structure of the private urban water service industry in Spain. Section 3 explains the aforementioned legislative reforms and reviews studies that have analysed their effect on market dynamics. Section 4 analyses the dynamics of the market in the period under study. Section 5 discusses the results and their policy implications. Finally, Section 6 highlights the conclusions.

2. Structure of the private urban water industry in Spain

The local municipalities are the authorities responsible for the domestic drinking water supply. Law 7/1985 establishes that local governments may choose to manage the service or outsource it directly. In the latter half of the 1980s and throughout the 1990s, there

were numerous cases of privatization of urban water service, adding to the historical concessions already in place (see Matés-Barco, 2021). In the twenty-first century, the participation of private companies in the Spanish water supply industry has become well established. However, recent years have seen a degree of opposition from some social groups to new privatizations along with a trend towards remunicipalization. González-Gómez et al. (2009) analyse the reasons why privatization is being reconsidered in Spain; March et al. (2019) discuss the social debate and trends towards remunicipalization in the Metropolitan area of Barcelona; furthermore, a recent study by Lobina and Planas (2021) examines the remunicipalization of the service in the mid-sized city of Valladolid. Other notable cases of remunicipalization are Medina Sidonia, Torrelavega and Arteixo.

The private segment of the urban water service market in Spain currently has an oligopolistic structure with two dominant companies: AGBAR (the acronym of Aguas de Barcelona), which is part of the multinational group Suez and operates under different regional denominations; and Aqualia, which belongs to the Spanish group Fomento de Construcciones y Contratas (FCC). In 2020, these two operators jointly supplied two out of every three Spanish municipalities that use private companies to provide urban water service and three out of every four inhabitants (see Table A1 in the Appendix). The rest of the market is divided between a few companies with a notable presence in the national market, such as Acciona and Gestagua; some operators that were initially provincial or regional in scope but have expanded their activity to the national market, such as Global OMNIUM and FACSA; and, finally, a group of small businesses at a regional or local level.

The high degree of concentration of the private provision of urban water service in the hands of AGBAR and Aqualia could indicate a problem with competition *for* the market. As noted above, the main underlying reasons for this are the lack of transparency in tenders, asymmetric information, and the fact that operators have little interest in providing the service in small municipalities. In addition to these circumstances, there

are cases of corruption in tendering process, attested to by court judgements, that do nothing to foster competition (GWI, 2013).

3. Legislative changes and market dynamics

3.1. Recent legislative reforms

In 2007, two approved Spanish reforms were closely related to urban water service contracts. Law 30/2007 on Public Sector Contracts, which transposed European Council Directive 2004/18/EC into Spanish law, was a regulation aimed at improving the management of and transparency in public contracting processes in Spain.³ Organic Law 8/2007 on the Financing of Political Parties reformed the financing mechanisms of political parties by prohibiting companies that contract services with the administration from financing them.

With regard to the water industry, Law 30/2007 promoted competition *for* the market through two main channels: improving transparency in tender processes and reducing the degree of discretion in the allocation of contracts in competitive tenders. Regarding transparency, the law made it mandatory to publish all information related to the tender processes initiated by local governments on an institutional website called *Contractor Profile*. From that moment on, whenever the local council started a tender to contract out the provision of urban water service, it had to announce the tender on this website. The information published must include the economic and technical conditions of the contract, the commitments to be fulfilled by the awarded firm, and any other specific requirements regarding the provision of the service; municipalities set all these terms and, thus, may differ widely across tenders. Furthermore, the composition of the committee

³ This regulation was subsequently amended by Law 9/2017 which transposed Directives 2014/23/EU and 2014/24/EU of the European Parliament and of the Council.

responsible for awarding the contract and the assessment criteria, including their weights, must also be posted on the website.

Concerning objectivity and impartiality, Law 30/2007 permitted any member of the municipal council or even a civil servant to preside over the contract award committees; previously, only the mayor had been allowed to do this. The awarding committee must evaluate and score bidders' offers for the economic conditions, including tariffs and planned investments, and technical conditions such as environmental issues or customer service plans. Whereas the economic terms tend to be scored using quantitative criteria, technical conditions are mostly qualitatively assessed. The final overall score assigned to each bidder provides the basis for the decision. In this regard, Law 30/2007 limited the discretion of the evaluation committee in its decision-making by establishing that quantitative aspects should prevail over qualitative aspects in the award criteria.⁴ At any rate, if the evaluation committee were to attach greater importance to qualitative assessment, its decision had to be endorsed by an external committee consisting of at least three experts or by a technical body previously designated in the tender documents.

3.2. Legislative reforms and market dynamics: previous studies

The impact of the legislative reforms outlined in Section 3.1 on the dynamics of the market for the private provision of urban water service in Spain, particularly on the degree of market concentration, has sparked the interest of several researchers. Albalade et al. (2017) look for evidence of favouritism in awarding contracts;⁵ if it were to benefit large operators, this behaviour could lead to greater market concentration. In addition, the paper assesses the extent to which Organic Law 8/2007 contributed to weakening the relationship between political parties and companies in the sector. The results provide

⁴ In practice, the weight of quantitative issues ranges between 55% and 70%.

⁵ In Spain, the alleged preferential treatment by some political parties towards certain companies that were awarded contracts has been the subject of judicial investigations, which in some cases have led to convictions (GWI, 2013).

robust empirical evidence that local governments headed by the People's Party (PP) were more likely to award contracts to Aqualia; as noted above, this operator is part of FCC, which was one of the leading financial backers of the PP in the 2000s. This relationship, however, was no longer statistically significant after the aforementioned legislative reform of 2007.

Albalade et al. (2021) analyse the factors that determine the probability of alternation (when the company awarded the contract is different from the holder of the contract coming to an end) in the renewal of public contracts for the private provision of urban water service. The study is carried out using information from 215 tenders for the contract renewal, organized between the years 2008 (soon after the legislative reforms) and 2019. The results show that the competition *for* the market, approximated by the number of tenderers, and transparency in the management of the tenders increases the probability of alternation. Conversely, alternation becomes less likely when the political party heading the local government has been in power for more than one term and holds an absolute majority. In this regard, the local government would have more incentive to renew the contract with the incumbent when relationships of trust and reciprocity have been established between local politicians and the service provider (Brown et al., 2006); moreover, it would be easier to renew the contract if the governing party has an absolute majority (Klein, 1996). Finally, it is found that the size of the contract holder does not influence the probability of alternation: small companies do not seem to be at a disadvantage compared to large operators in such tenders. The latter finding is somewhat unexpected; we might have expected to see a trend towards market concentration after the service renewal tenders due to smaller companies being replaced by the large operators in the sector.

Other recent articles have studied the relationship between market concentration and variables such as the price of water. Bel et al. (2015) show that a high concentration of the market at the time of the privatization of urban water service is associated with

higher prices; likewise, once the contract has been awarded, the companies with the largest market share put their dominant position into effect by setting higher prices. The authors recommend establishing regulatory and institutional frameworks that promote competition *for* the market in tenders relating to the privatization of urban water service, as well as price control mechanisms. Picazo-Tadeo et al. (2020) show that these mechanisms, designed for the benefit of consumers, can also be used by local politicians for their own ends, particularly for electoral gains. In this respect, they find robust empirical evidence of the influence of the electoral cycle on urban water prices: price rises are smaller in the years immediately preceding municipal elections.

In short, the 2007 legislative reforms mentioned in Section 3.1 had the combined effect of weakening the association between companies and political parties in the awarding of contracts for the privatization of urban water service; notwithstanding, some judiciary inquiries into corruption related to water contracts awarded after 2007 (e.g., the *Pokemon case*) indicate that irregular practices continued.⁶ Other consequences, likely related to the mentioned effect, were increased competition *for* contracts, more frequent rotation of the firm providing the service, and the fact that company size did not play a role in the change in operators when tenders resulted in a new company being awarded the contract. All these effects should counteract the trend towards greater market concentration observed before the reforms, but has this happened? Our analysis aims to answer this question.

⁶ Law 5/2012 on the Financing of Political Parties reformed Organic Law 8/2007 by extending the prohibition on funding political parties to firms that belong to the same group as those that have contracts with the administration, or are controlled by them.

4. Market dynamics in the private urban water service industry

4.1. Data collection and calculation of concentration indicators

We analyse the market concentration in the private segment of the urban water service industry in Spain utilizing the database developed originally by Albalade et al. (2017; 2021). The paper by Albalade et al. (2017) studied 922 privatizations of the service that occurred between 1984 and 2016, whereas, as mentioned in Section 3.2., in Albalade et al. (2021) a sample of 215 public tenders for contract renewal held in 2008-2019 were examined. From these two databases, information was retrieved about the operators awarded the contract and the ownership of their capital, distinguishing between entirely private firms and mixed operators, for which the share of private capital was also recorded. This information has been expanded in this research to ensure it is more representative of Spanish municipalities with private provision of urban water service. The data sources used to do so include the official websites of local councils; municipal associations and consortia; websites and management reports of the operators; specialist websites for public tenders in Spain (*Infopublic* and *Infonalia*, among others) that were monitored for invitations to tender; and also the economics press.

The sample includes 1,393 municipalities where urban water service has been provided by a private or mixed company at some point in the period 2000-2020. Table 1 shows the regional distribution of the sample as well as the affected population. A good many of the municipalities are concentrated in Catalonia, Andalusia, Valencian Community and Castile-La Mancha. Other regions where there is a notable presence of private companies responsible for service provision are Extremadura, Galicia, Castile and León and Murcia. On the contrary, the number of municipalities in the sample is insignificant in the Basque Country, Madrid and La Rioja, with none at all in Navarra. The primary reason is that governments in these regions have historically promoted public operators and consortia that provide water to large areas, thus taking advantage of production economies of scale. In Madrid, for example, the public operator Canal de Isabel II currently provides

the service to 173 out of the 179 municipalities in the region. In some areas of the Basque Country, the public firm Consorcio de Aguas de Bilbao Bizkaia provides water to nearly three-quarters of municipalities in the province of Bizkaia.

Beyond its regional distribution, the sample represents about 75% of the municipalities and 95% of the population with private provision of urban water service in Spain (González-Gómez et al., 2014; AEAS, 2020). In this regard, it should be noted that the sample includes only the municipalities for which information on service provision was available for the entire period 2000-2020 and that the availability of information is more limited in the early years.

INSERT TABLE 1

Considering that the research objective is to analyse the market dynamics and concentration in the private segment of the urban water service industry, a broad definition of the relevant market has been applied, including companies with private capital and those with a mix of public and private capital. The reason for this is that regardless of the model of privatization, what matters is competition *for* the market (CNMC, 2020; López-Vallés et al., 2020); besides, the procedure for accessing the market in public tenders is the same regardless of whether the service is contracted out to a private or a mixed-capital company. In any case, the database can be used to define more restrictive alternative markets made up exclusively of private companies (which would include 1,099 municipalities) or of private and mixed-capital companies with a majority of private capital (1,196 municipalities).

Finally, two types of market concentration indicators have been calculated: the *Hirschman-Herfindahl Index* (HHI), computed as the sum of the squared market shares of all the companies operating in the relevant market; and the *Concentration Indices* CR1 to CR4, with CR_n being the cumulative percentage market share of the *n* leading companies. These indicators have the pros of being straightforward and requiring a small amount of data to compute. Furthermore, the HHI accounts for shares of all the firms operating in

the market and is also employed by European and US antitrust authorities to detect threats to competition. It should be noted that all indicators of concentration have been calculated relative to the total number of municipalities supplied by operators in the relevant market at either the national or regional levels. This approach is appropriate given that each contract for urban water service is a separate product and is regulated by different local authorities.

4.2. Dynamics of market concentration

The regulation governing the assessment of horizontal mergers in the European Union (EU) is Council Regulation 139/2004 on the Control of Concentrations between Undertakings (EC, 2004a). The document Guidelines on the Assessment of Horizontal Mergers under the Council Regulation on the Control of Concentrations between Undertakings (EC, 2004b) establishes that there are unlikely to be competition concerns when the HHI is between 1,000 and 2,000 points, and the HHI delta (which measures the change in the HHI) is below 250; or when the HHI is above 2,000⁷, and the delta is below 150, except when special circumstances arise (Article 20). In addition, the document states that if the leading company in the relevant market has a market share of more than 50%, this in itself may be evidence of the existence of a dominant position (Article 17).

Based on these reference parameters, the private market for providing urban water service in Spain is highly concentrated; throughout the entire period under study, the HHI exceeds the threshold established by the EU legislation, indicating there are competition concerns (Figure 1a).⁸ Moreover, most of the market is in the hands of the two major operators in the sector at the national level: AGBAR and Aqualia; together, they supply nearly 70% of Spanish municipalities with private provision (Figure 1b).

⁷ An HHI above 2,500 is often seen as an indication of a concentrated market.

⁸ The equivalent of the 2,000 point threshold set by the European authorities in terms of the graphs presented in this paper would be 0.2.

In terms of dynamics, we observe a moderate decline in market concentration in the period 2000-2020, as shown by the evolution of the HHI (Figure 1a). The index rose from 0.255 in 2000 to 0.281 in 2007 before dropping to a low of 0.241 in 2016 and then rising again to 0.250 in 2020. This dynamic suggests that the legislative reforms of 2007 may have had the effect of reversing the trend towards greater concentration observed in the previous five-year period;⁹ however, the effect seems to tail off from 2016. Figure 2 shows how these trends hold regardless of how the relevant market is defined.

INSERT FIGURES 1 AND 2

In order to provide further support for the relationship between concentration in the private segment of the Spanish urban water service market and the legislative changes of 2007, a dynamic regression analysis has been performed. Notably, this approach allows us to account for the fact that a period of time may pass between the moment changes in legislation occur (the 2007 reforms) and their eventual impact on the concentration of the market. In particular, a distributed-lag model using the Koyck transformation (Koyck, 1954) has been estimated.¹⁰ In this framework, it is assumed that the effect of the reforms on concentration declines exponentially over time, with the rate of decline and the magnitude of the effect being determined by the data. The results are as expected (Table 2).

⁹ The subsequent regulations passed in 2013 (Law 19/2013 on Transparency, Access to Public Information and Good Government, and further regional developments) may have also affected market concentration, as suggested by one referee. However, our belief is that this impact was rather limited: whereas Law 30/2007 explicitly focused on the transparency of public sector contracts, Law 19/2013 had a much more general scope and did not make a significant additional contribution to the transparency of public service contracting processes.

¹⁰ Given that market concentration declines for several years after the reforms, a series of dynamic models were initially estimated including as explanatory variables of concentration the contemporaneous value and some lags (up to eight sequential lags) of the dummy *reforms 2007*. However, including a large number of lags greatly reduced the degrees of freedom and increased multicollinearity. The Koyck transformation helps to deal with these drawbacks by making the model more parsimonious, i.e., with a much smaller number of parameters.

The short-run impact of the reforms on market concentration is negative and statistically significant at 1%; the estimated parameter is equal to -0.0103. However, the rate of decline over time of this effect is estimated at 0.7002, so the long-run effect is estimated at -0.0343.¹¹ Lastly, the results from the Breusch-Godfrey test for autocorrelation do not allow us to reject at the standard 5% significance level the null hypothesis of no serial correlation in the data.¹²

INSERT TABLE 2

Regarding concentration trends at the regional market level, Figure 3 shows the evolution of the HHI and CR indicators in the Spanish regions with more than 30 observations (municipalities); at this size, the sample is considered sufficiently representative. The dynamics of market concentration at the regional level differ widely on a case-by-case basis. Considering the heterogeneous regional pattern, it is worth recalling two factors that might contribute to those divergences. Urban water service is subject to regional regulation in Spain, so inter-regional regulatory disparities exist. The market shares of the major players in the service also differ widely between regions.¹³ Aside from this diversity, according to the thresholds set by the European authorities, all regions share the characteristic of having a highly concentrated market for the private provision of urban water service. However, this common feature obscures the different reality of the dominant companies in each region.

¹¹ The long-run cumulative effect of the reforms on market concentration is computed as the ratio between the coefficient of the short-run effect and one minus the rate of decline of the impact over time, which is provided by the coefficient of the lagged dependent variable (see Koyck, 1954).

¹² The model in Table 2 has also been run using the *Hirschman-Herfindahl Index* computed in the alternative markets that include only private firms, on the one hand, and private firms plus mixed ones with a majority of private capital, on the other. The results, which are available on request, are fairly similar.

¹³ One exception is the single-province region of Madrid, where the entirely dominant position of the public operator Canal de Isabel II (this firm provides the service to nearly 97% of municipalities in the region, as noted in Section 4.1) is due to historic institutional reasons (see Martínez Vázquez de Parga, 2001).

AGBAR holds a clear dominant position in Catalonia, with a market share in 2020 of 66.4% of municipalities with private provision. This operator provides the service under the name Aigües de Barcelona in much of the Metropolitan Area of Barcelona and under the name SOREA in the other Catalan municipalities. In the Valencian Community, the market is divided up at the provincial level. In Alicante, the dominant position corresponds to AGBAR, operating under the name of Hidraqua; in Castellón, the dominant company is FACSA; and in Valencia, it is Global OMNIUM. In Castile-La Mancha, the company with the largest market share (60.4% in 2020) is Aqualia. In Extremadura, AGBAR is the dominant operator, with a market share of 57.2%. Conversely, in regions such as Andalusia and Castile-La Mancha, we do not observe a clear market dominance position, although AGBAR and Aqualia are the leading companies. In summary, some of the local markets are regional in scope while others are provincial.

With respect to the dynamics of concentration between 2000 and 2020, in six of the regions analysed (Andalusia, Castile and León, Castile-La Mancha, the Valencian Community, Galicia and Murcia) the concentration indices at the end of the period are lower than in the years following the passing of the 2007 reforms;¹⁴ however, in the remaining three (Cantabria, Catalonia and Extremadura) the index scores are higher in 2020, reflecting an increase in concentration. Furthermore, in Andalusia and Castile-La Mancha, the downward trend in concentration reverses at the end of the period analysed, albeit without exceeding the post-reform level.

4.3. Corporate transactions and market dynamics

The evolution of the concentration in the private market for the provision of urban water service described in Section 4.2 has been influenced by several acquisitions of other competing companies by the leading operators AGBAR and Aqualia. Table 3 shows all the

¹⁴ The concentration of the market in Andalusia has also been analysed, eliminating 21 municipalities where urban water service had been remunicipalized before the legislative reforms of 2007. The results regarding the dynamics of concentration are similar.

corporate transactions identified during the period under analysis. In the decade following the entry into force of the 2007 reforms, there has been a notable increase in such transactions, not so much in terms of numbers but more in terms of scope: in the 2000s, acquisitions affected 32 municipalities, whereas in the 2010s there were 73 municipalities affected, representing an increase of 128%. The increase in the population affected by acquisitions, although lower, is also notable.

INSERT TABLE 3

The effects of these transactions on concentration indices at the national level are shown in Figure 4, which compares the evolution of observed HHI (panel a) and CR (panel b) concentration indices with those that would have been recorded in the absence of corporate acquisitions. As mentioned above, both types of indicators point to a downward trend in market concentration that begins after the 2007 reforms, stops in the middle of the 2010s and reverses at the end of the decade. However, in the counterfactual scenario in which no acquisitions occurred, the decreasing trend in market concentration would have continued until 2020, the end of the period analysed. These dynamics are very similar when only private companies are included in the relevant market (Figure 5a), or private companies and mixed capital ones with a majority of private capital (Figure 5b).

INSERT FIGURES 4 AND 5

The effects of corporate transactions on market concentration are accentuated when the analysis is conducted at the regional level. The main corporate transactions are discussed in more detail below.

Acquisition of CASSA by AGBAR

Companyia Aigües de Sabadell SA (CASSA) had about 40 municipal urban water service contracts in Catalonia in 2010. In July of that year, AGBAR, which holds a hegemonic position in the Catalan market, launched a takeover for all the private capital of CASSA

it did not own at that point (AGBAR already owned an 11% minority stake).¹⁵ This move met with resistance from CASSA's majority shareholding groups, which delayed the process. While this was going on, the Catalan Competition Authority (ACCO) ruled (on 18 October 2010) that there was no indication that the concentration transaction was subject to the notification obligation since it did not exceed the thresholds laid down in Article 8 of Spanish Competition Law 15/2007.¹⁶ The takeover became effective in mid-2013, and AGBAR went on to control the 40 or so service contracts CASSA had in 2013, representing 16% of the sample in the region.

The impact of this corporate transaction is illustrated in Figure 6, which compares the observed evolution of market concentration with what would have occurred if the acquisition had not taken place. As can be seen, both the HHI and the CR indices show that the downward trend in the concentration of the regional market was not only interrupted by this transaction in 2013 but a considerable rise was also registered. In the absence of this acquisition, the declining trend would have continued until the end of the decade.

INSERT FIGURE 6

Acquisition of OXITAL by AGBAR

The company Oxital led the regional market in Cantabria in 2016, with ten contracts for providing urban water service, close to 30% of the total. Oxital's entire line of business related to urban water service was the subject of a friendly takeover by AGBAR, which went from being the second company in the Cantabrian market to taking on a hegemonic position. The transaction was not analysed by the relevant competition authority (the

¹⁵ CASSA is a mixed-capital operator in which, following the acquisition, AGBAR holds 79.9% of the capital while the remaining 20.1% is held by the municipality of Sabadell.

¹⁶ This article establishes the obligation to provide notification when a share equal to or greater than 30% of the relevant market is acquired, either at national level or in a defined geographical market therein.

CNMC, in the absence of a regional authority) probably because there was no conflict between the companies, unlike the situation with CASSA; moreover, the market share of the acquired group was below 30%. Nevertheless, this acquisition had a major impact on the concentration in the regional market (Figure 7). If this corporate transaction had not taken place, the HHI in 2020 would have remained below the post-reform levels of 2007, as would the CR indices.

INSERT FIGURE 7

Acquisition of Agua y Gestión by Aqualia

The operator Agua y Gestión entered into an arrangement with creditors in November 2018. At that time, it had twenty contracts for urban water service in Andalusia (5), Castile-La Mancha (7) and Extremadura (8). The company was the subject of a friendly takeover by Aqualia in 2019 that affected 100% of its capital. Before this corporate acquisition, was the leading company in terms of contracts in Andalusia and Castile-La Mancha, with market shares of 40% and 57%, respectively; in Extremadura Aqualia held 30% of the market. The operation was not analysed by the competition authorities of Andalusia and Extremadura, regions where the acquired company had a market share of close to 7% and 4%, respectively. Nor was it analysed by the CMNC in the case of Castile-La Mancha, where it would potentially have had jurisdiction given the lack of a regional authority.

Figure 8 shows the observed and counterfactual evolution of the market concentration in the three regions affected by this acquisition; the case of Andalusia includes the acquisition of the company Codeur, in the Almerian municipality of Vera, also by Aqualia in 2019. The corporate transactions in the Andalusian region had a minor effect, failing to reverse the downward trend in concentration caused by the regulatory reforms of 2007, which was reinforced in 2013 when the operator Acciona entered the Andalusian market by securing a contract involving a large number of municipalities in the province of Jaén. In any case, the acquisitions by Aqualia in 2019 marked a turning point in the trend in

concentration indices at the end of the analysed period. A similar dynamic is observed in Castile-La Mancha, albeit more pronounced with respect to the post-reform reduction in concentration and the increase at the end of the period following the acquisition of Agua y Gestión by Aqualia; all in all, the concentration indices for the regional market in 2020 were much lower than those registered a decade earlier.

INSERT FIGURE 8

The case of Extremadura is different due to two circumstances. Firstly, the regional market share affected by Aqualia's 2019 corporate transaction, although relatively small at 7%, is larger than in Andalusia and Castile-La Mancha. In addition, in 2013 and 2014, urban water service was privatized in many municipalities in Extremadura. Most of these contracts were awarded to AGBAR, a company that already enjoyed a substantial degree of hegemony in the region; hence, in 2013, we see a break in the slight downward trend in post-reform concentration. The rise in concentration indices in the Extremaduran region is accentuated with the 2019 Aqualia transaction.

5. Discussion and economic policy implications

In 2007, legislative reforms were approved in Spain, which, as explained in Section 3.1, ensured greater transparency in public tenders (Law 30/2007) and banned companies awarded public contracts from financing political parties (Organic Law 8/2007). The academic papers reviewed in Section 3.2 show that these reforms increased competition *for* contracts in the tenders to privatise urban water service. Section 4.2 documents how the concentration levels of the Spanish market for the private provision of the urban water service declined after the reforms, but a decade later were rising again. This pattern suggests that the regulatory reforms may have lost effect within a decade of their adoption. In this respect, a few years after the reforms, there was a rise in the number of acquisitions by AGBAR and Aqualia of competing companies with a significant presence in

some regional markets; Section 4.3 describes these corporate transactions and their impact on the market structure.

Corporate transactions in the last decade are unlikely to have benefited from the financial troubles caused by the Great Recession. Only the acquisition of CASSA by AGBAR occurred at a time of strong economic contraction (year 2010), but, as has been pointed out, it prompted opposition from the groups that had majority control of CASSA, leading to a three-year delay in its execution. Given this circumstance, we can rule out financial difficulties faced by the acquired company as the driving force behind the transaction. The other two corporate acquisitions analysed take place during a period of economic growth. AGBAR's acquisition of Oxital's line of business related to urban water service in 2016 reflected the acquired company's interest in securing financial resources to expand into markets less mature than the water market. In the case of Agua y Gestión, its financial difficulties may have played a role in its acquisition by Aqualia in 2019.

On the contrary, it is much more likely that the primary motivation for the corporate transactions is a strategic response by market leaders to gain market share and thus counterbalancing the effects on competition of the 2007 legislative reforms. The central axis of this strategy would be the acquisition of companies with a small presence in the Spanish market as a whole but a larger market share in the regions where they operate; this is especially evident in the cases of Catalonia and Cantabria. These concentration processes, which have had significant effects in regions such as Cantabria, Catalonia and Extremadura, have not been subject to scrutiny by the CNMC at the state level, nor by the competition authorities in some of the regions concerned. The main reason for this seems to be that in none of these transactions was the acquired company's regional market share greater than 30%.

Public service markets are quasi-markets (Boyne, 1998; Lowery, 1998), where competition is usually limited to the tender process; after the contract has been awarded, there is a provision period under a monopoly regime that additionally gives the successful

tenderer competitive advantages in future contracting processes. This feature accentuates the concentration dynamics in the market *for* contracts, which is why Spanish Competition Law 15/2007 may not be sufficient to regulate such service.

As explained in Section 4, Article 17 of the Guidelines on the Assessment of Horizontal Mergers under the Council Regulation on the Control of Concentrations between Undertakings (EC, 2004b) establishes that when the leading company in the relevant market has a market share in excess of 50%, this in itself may be evidence of the existence of a dominant position. In addition, it also states that the Commission has '*in several cases considered mergers resulting in firms holding market shares between 40% and 50%, and in some cases below 40%, to lead to the creation or the strengthening of a dominant position*'. With regard to market shares and the control of concentrations, the guidelines suggest that there is no indication of the risk of a dominant position where the share of the companies concerned is less than 25%, either in the common market or in a substantial part of it (Article 18).

None of the mentioned situations has arisen in the concentrations analysed in this study if the Spanish market as a whole is taken as the relevant market. The assessment would be very different if the relevant markets were the regions, which would make sense seeing as the service is subject to regional regulation and given that the assets (infrastructure networks) have a marked territorial dimension. For example, in AGBAR's acquisition of Oxital's line of business involving urban water service management, the acquiring company had a modest market share in Cantabria, although the acquired operator's share exceeded 28%. As a result of the transaction, AGBAR held 47% of municipal contracts in the region, and at the end of the decade, this figure nearly passed 50%; that is, the minimum level of concentration indicating the existence of a dominant position. Table A1 in the Appendix shows the market share in 2020 of the two leading companies in the Spanish market and the regions discussed in the preceding sections.

This situation is even more evident in the case of AGBAR's acquisition of CASSA. Although the acquired company held 15% of the contracts in Catalonia, before the transaction, the acquiring operator held more than 50%. Given these circumstances, the acquiring company's position could have been deemed dominant under EU law even prior to the corporate transaction. Lastly, regarding Aqualia's acquisition of Agua y Gestión, although the acquired operator had limited market share in the three regions concerned (Andalusia, Castile-La Mancha and Extremadura), the acquiring company held substantial shares in Castile-La Mancha (57% of municipal contracts) and Andalusia (41%). The first case would be a situation involving a dominant position, while the second is less obvious.

In all the regions affected by the corporate transactions analysed, the HHI is above 2,500, and the delta stands well above 150. In other words, these values exceed those that the abovementioned Guidelines on the Assessment of Horizontal Mergers under the Council Regulation on the Control of Concentrations between Undertakings (EC, 2004b) establishes as problematic in terms of market concentration and its effects on competition (see Section 4).

One possible objection to the above discussion is that EU competition law generally refers to market shares in terms of customers or population, whereas in this research, the emphasis has been on indicators relating to municipalities (contracts). Nevertheless, as explained in Section 4.1, this approach is appropriate given that each contract is a product that is differentiated from the rest and is regulated by municipal authorities. In any case, it is worth clarifying that when it comes to the provision of urban water service, the concentration indices in terms of population are generally higher than those relating to contracts. As Table A1 shows, this is true both for Spain as a whole and for most of the regions analysed: Andalusia, Cantabria, Castile and León, Catalonia, the Valencian Community and Murcia. Conversely, in Extremadura and Galicia, there is no appreciable difference, while Castile-La Mancha is the only Spanish region where the concentration is

notably higher in terms of contracts than in terms of population. Beyond market dynamics, the initial situation must also be taken into account. Table A1 shows, both for Spain as a whole and at the regional level, the high concentration of the private market for urban water service is in the hands of the leading companies in each area. This situation points to the opportunity to establish levels indicating high concentration, something European legislation already addresses.

In short, the promotion of competition *for* contracts, although hard to achieve, is a desirable objective when opting to outsource any public service, particularly in providing urban water service. The analysis of the effects of the 2007 regulatory reforms related to public service contracts on corporate dynamics in urban water service in Spain suggests that it would be worth reviewing the parameters used to define the concept of dominant position, to bring them closer into line with the European recommendations. Similarly, it would be desirable for the bodies responsible for ensuring competition to engage more actively in the issue: the CNMC in cases where concentrations are national in scope or where they affect regions that do not have their own competition authorities; and the relevant regional authorities when the transactions mainly affect their respective regions.

6. Conclusions

This paper reviews a couple of regulatory reforms in Spain that have directly affected tenders for public service contracts (Law 30/2007 on Public Sector Contracts) and the interaction between the private agents participating in tenders and the political system (Organic Law 8/2007 on the Financing of Political Parties). Though not necessarily intentional, the simultaneous passing of the two reforms seems to have had some positive effects on the market *for* the private provision of urban water service, by mitigating the systematic association between political parties and the awarding of contracts, and by reversing in many cases (or at least lessening it in others) the trend towards market concentration. However, in his analysis of economic reform processes, Albert Hirschman

(1971) noted no permanently optimal reforms or policy measures since the dynamic interaction between the market and governments continues after their implementation. He thus suggested that finding a good pattern for periodic policy change is preferable to constantly seeking optimal reforms.

Consistent with Hirschman's observations, the effect of the reforms on market concentration has weakened, and even reversed, in some Spanish regions a decade after their implementation. This trend is due to the strategy employed by the large operators in the sector, AGBAR and Aqualia, which have acquired smaller companies but have a particular presence in specific regional markets.

Therefore, if limiting concentration in the market *for* urban water service contracts and safeguarding space for competition is deemed a worthwhile objective, it seems appropriate to raise the need for further legislative reforms. In this regard, it would be advisable to review the parameters used to define the concept of dominant position in Spain, aligning them with the recommendations of the European authorities. At the institutional level, it would also be desirable to have more active intervention by the bodies responsible for ensuring competition in the sector: the relevant regional authorities in cases where corporate transactions occur that have a particular impact on their respective regions; and the CNMC when there is a state-level dimension to these transactions, or they affect regions that do not have their own competition authorities.

Acknowledgements

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Table 1.
Sample composition: municipalities and population by region

	Municipalities	Population ^a		Municipalities	Population ^a
Andalusia	238	4,249,225	Castile-La Mancha	205	1,410,617
Aragón	27	238,405	Extremadura	131	690,648
Asturias	28	547,940	Galicia	94	1,594,720
Balearic Islands	26	324,889	Madrid	4	252,472
Basque Country	4	52,156	Murcia	40	1,473,289
Canary Islands	25	1,446,782	Navarra	0	0
Cantabria	32	418,664	La Rioja	7	54,988
Catalonia	243	5,240,458	Valencian Community	216	4,131,419
Castile and León	73	1,266,458	SPAIN	1,393	23,393,130

Source: Own elaboration.

^a Number of inhabitants in 2019.

Table 2.

Dynamic regression: the dependent variable is the Hirschman-Herfindahl Index

	Estimated parameter	p-value
Constant	0.0842	0.001**
Reform 2007 _t (<i>dummy variable equal to 1 from 2008 onwards</i>) ^a	-0.0103	0.000**
Hirschman-Herfindahl Index _{t-1} (<i>ranging from 0 to 1</i>)	0.7002	0.000**
Adjusted R-squared	0.929	
Number of observations	20	
Breusch-Godfrey LM test for autocorrelation (<i>Chi-squared</i>) ^b	3.007	0.082

Source: Own elaboration.

** means statistically significant at 1%.

^a Law 30/2007 on Public Sector Contracts was passed on 30 October 2007, but it did not enter into force until 30 May 2008. Accordingly, the first year for which this dummy variable takes the value of 1 is 2008.^b The null hypothesis is that there is no serial correlation.

Table 3.
Corporate transactions^a of AGBAR and Aqualia

Year	Acquiring	Acquired	Affected		Included in the sample	
			Municipalities	Population	Municipalities	Population
2004	AGBAR	Helguina (Ferrovial)	21	248,362	19	230,758
2005	AGBAR	ATERCA ^b	1	17,734	1	17,734
2006	AGBAR	Meridional Aguas	2	20,505	2	20,505
2007	AGBAR	Aigua de Rigat	8	65,068	8	65,068
2013	AGBAR	CASSA	43	355,911	37	348,261
2016	AGBAR	Oxital	10	23,724	10	23,724
2019	Aqualia	Agua y Gestión	19	146,698	16	140,589
2019	Aqualia	Codeur	1	16,452	1	16,452
			105	894,554	94	863,091

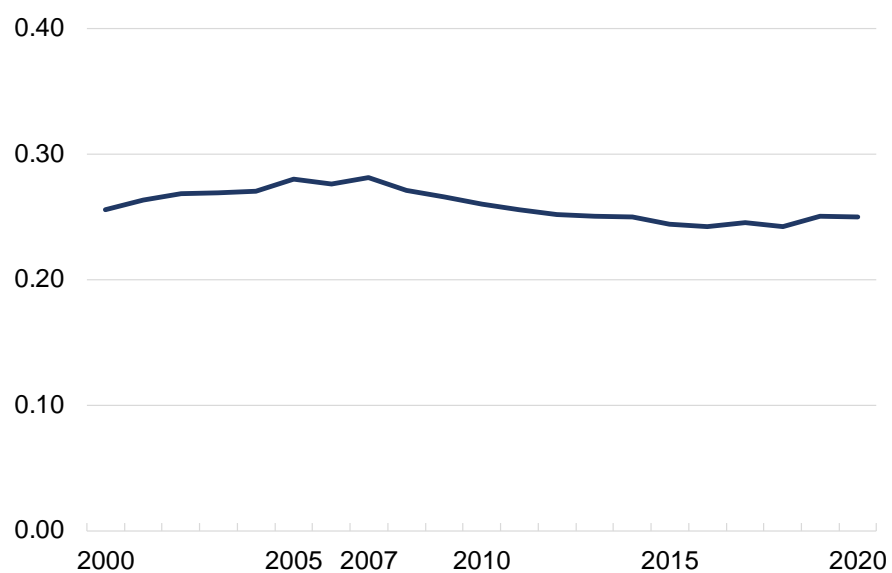
Source: Own elaboration.

^a The Suez Group's entry into and subsequent exit from the shareholding of Aguas de Valencia in 2007 and 2017, respectively, have not been considered.

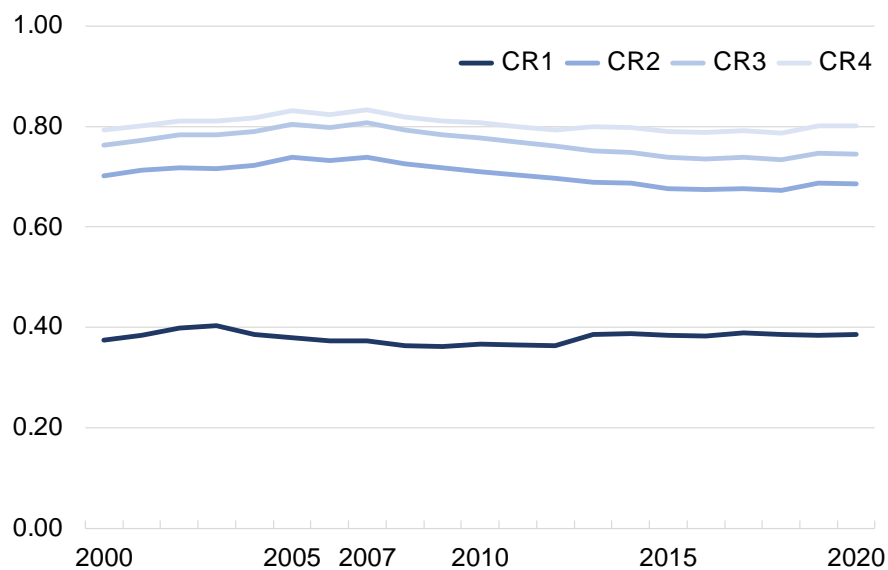
^b The affected municipality is Calvià, where ATERCA managed urban water service in only some of the population centres.

Figure 1.
Concentration in the market for the private provision of urban
water service, 2000-2020

Panel a. Hirschman-Herfindahl Index (HHI)

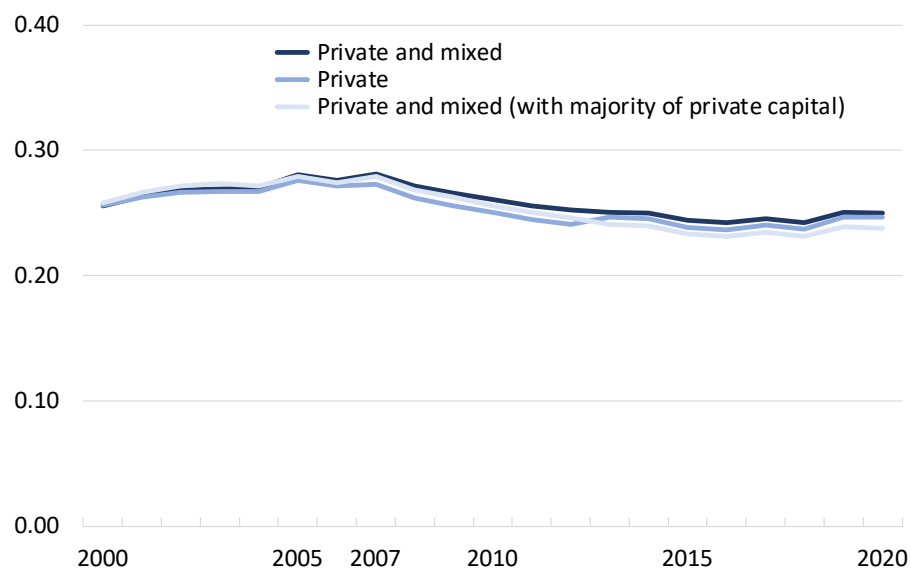


Panel b. Concentration Ratios (CR)



Source: Own elaboration.

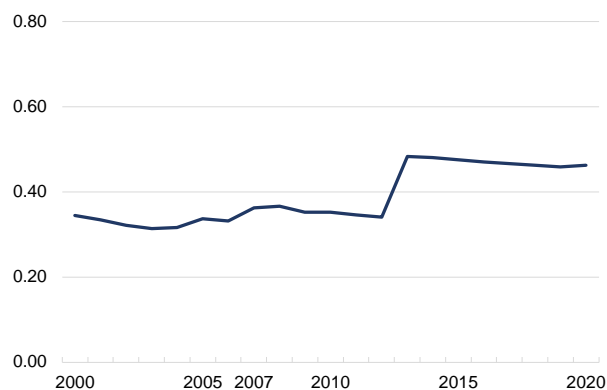
Figure 2.
Concentration in the market for the private provision of urban water service,
2000-2020. *Hirschman-Herfindahl Indices (HHI)* in alternative markets



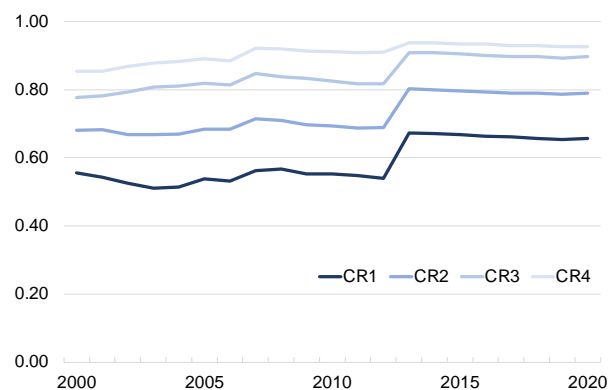
Source: Own elaboration.

Figure 3.
Concentration in the regional markets for the private provision of urban water service, 2000-2020. *Hirschman-Herfindahl Index (HHI)* and *Concentration Ratios (CR)*

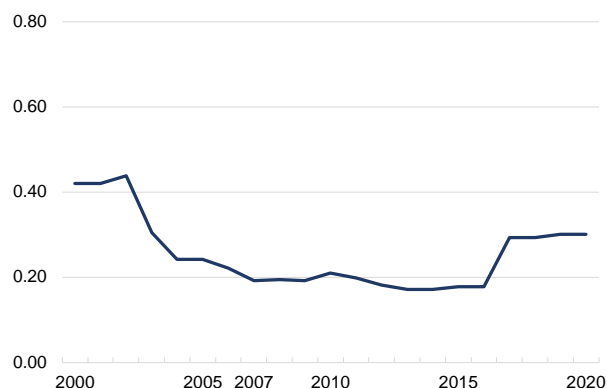
Catalonia - HHI



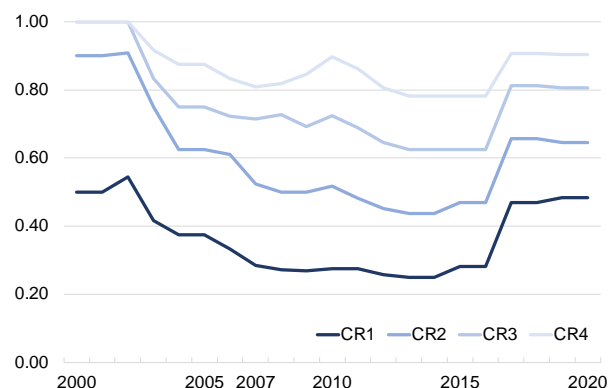
Catalonia - CR



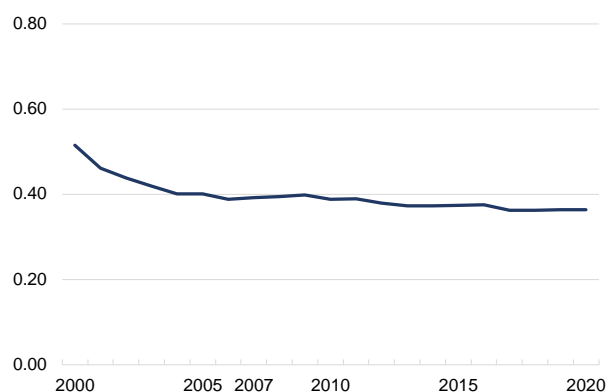
Cantabria - HHI



Cantabria - CR



Castile and Leon - HHI



Castile and Leon - CR

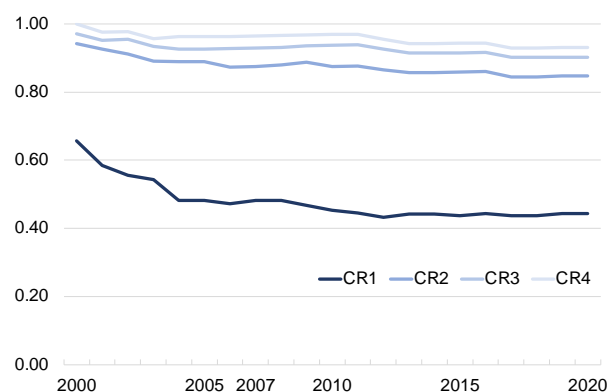
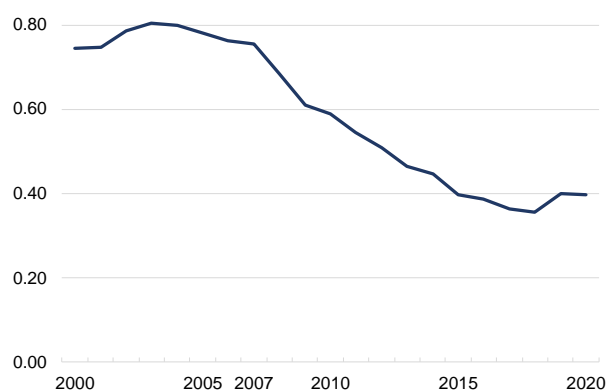


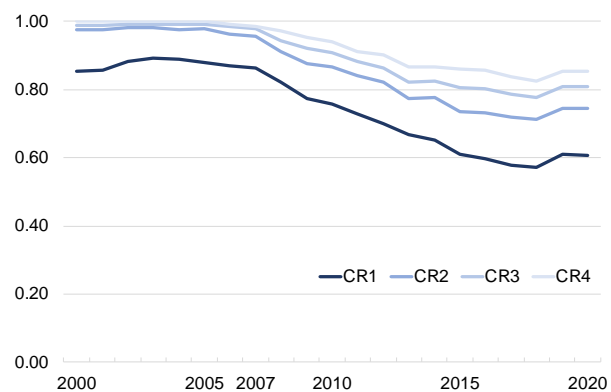
Figure 3. (Continued)

Concentration in the regional markets for the private provision of urban water service, 2000-2020. *Hirschman-Herfindahl Index (HHI)* and *Concentration Ratios (CR)*

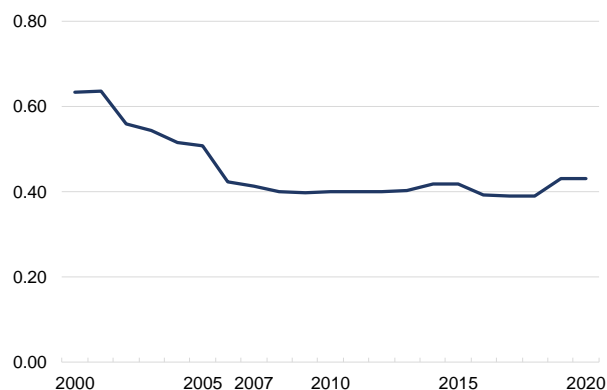
Castile-La Mancha - HHI



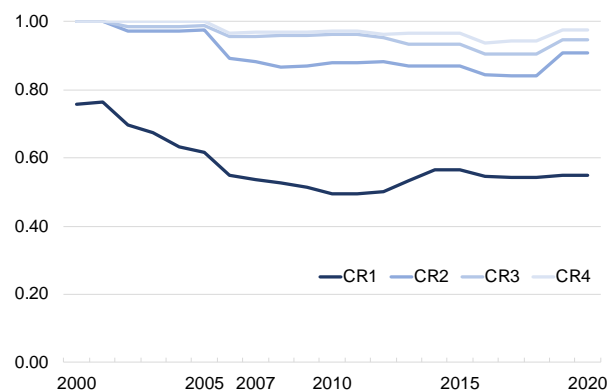
Castile-La Mancha - CR



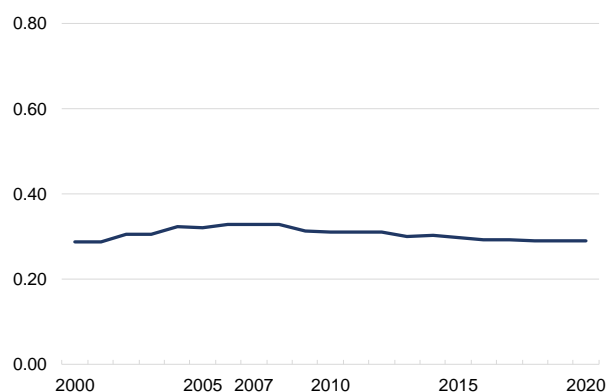
Extremadura - HHI



Extremadura - CR



Galicia - HHI



Galicia - CR

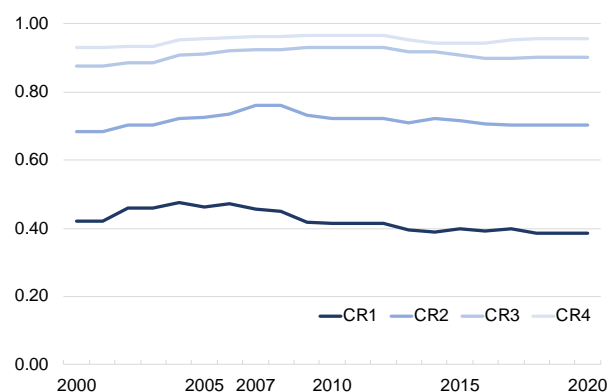
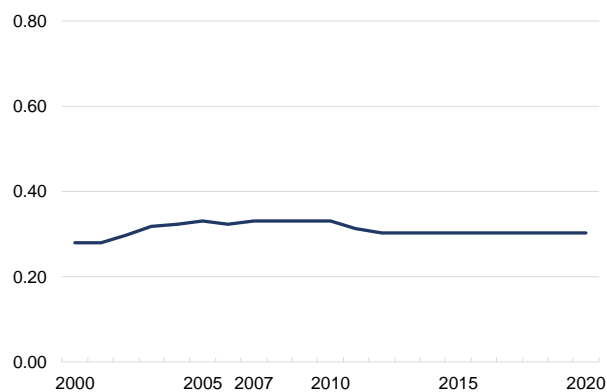


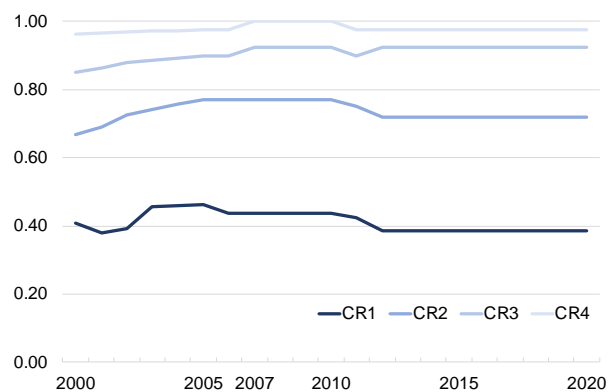
Figure 3. (Continued)

Concentration in the regional markets for the private provision of urban water service, 2000-2020. *Hirschman-Herfindahl Index (HHI)* and *Concentration Ratios (CR)*

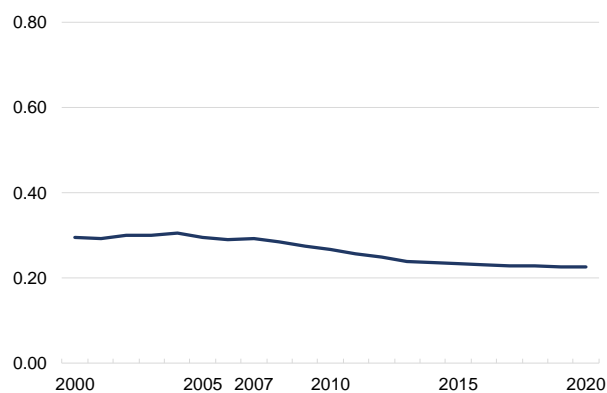
Murcia - HHI



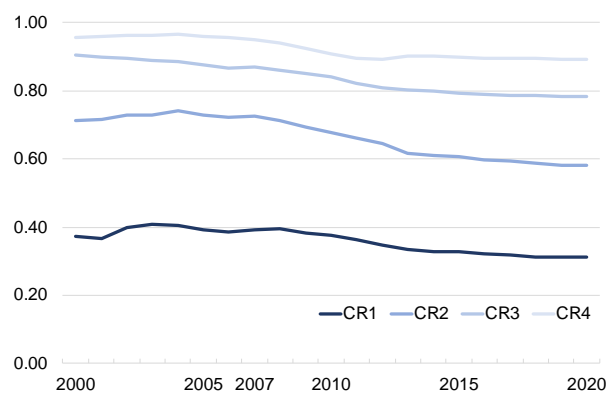
Murcia - CR



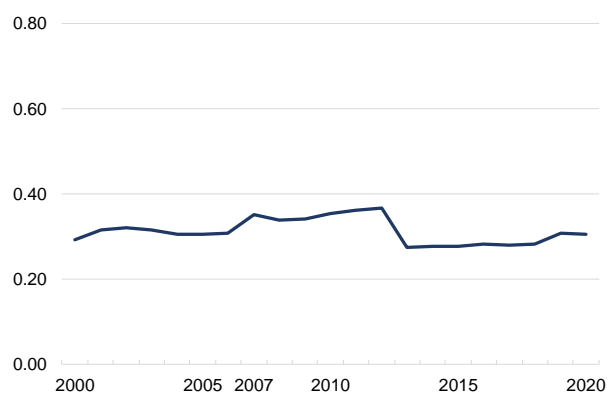
Valencian Community - HHI



Valencian Community - CR



Andalusia - HHI



Andalucía - CR

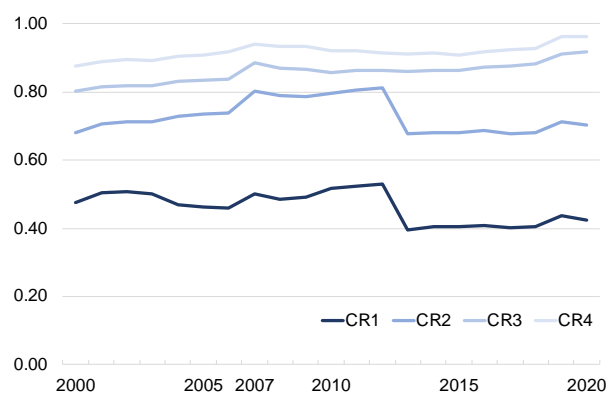
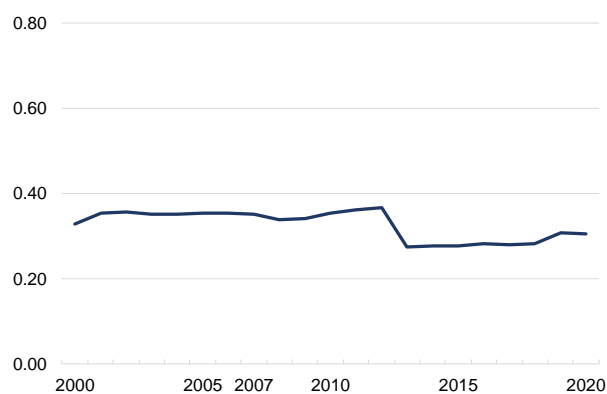


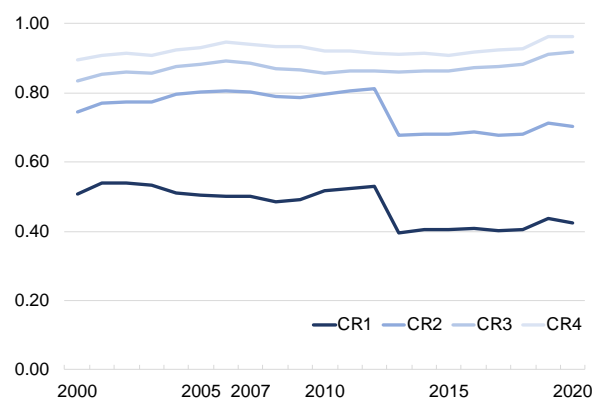
Figure 3. (Continued)

Concentration in the regional markets for the private provision of urban water service, 2000-2020. Hirschman-Herfindahl Index (HHI) and Concentration Ratios (CR)

Andalusia - HHI; alternative scenario^a



Andalusia - CR; alternative scenario^a

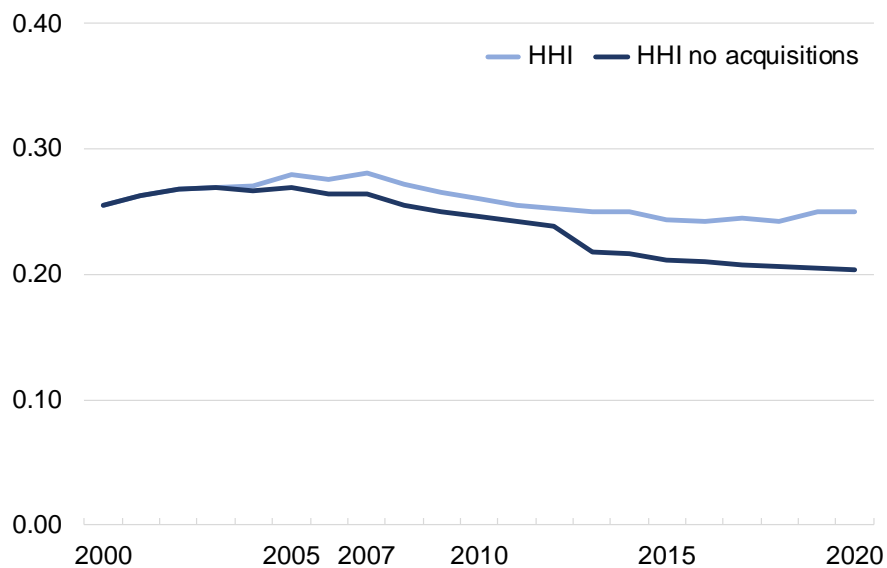


Source: Own elaboration.

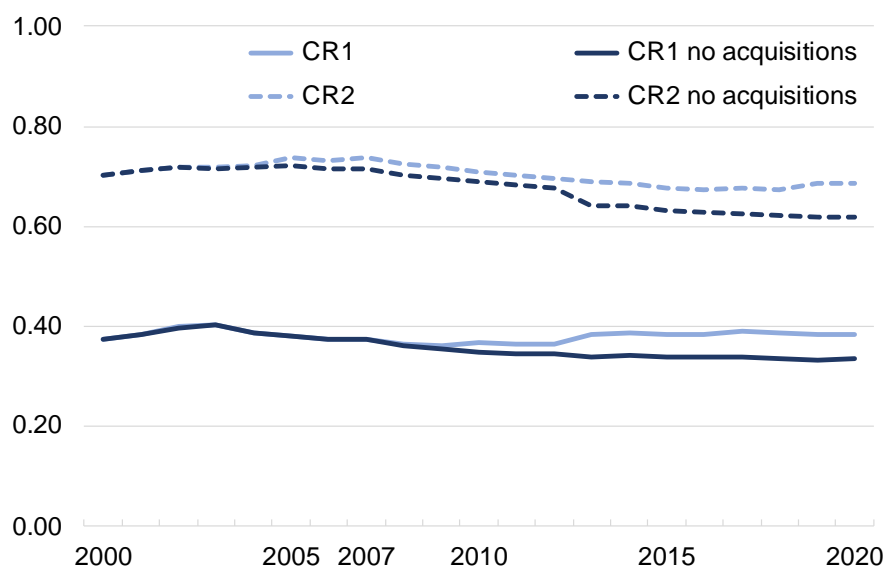
^a In the alternative scenario for Andalusia, the concentration indicators for 21 municipalities in which urban water service was remunicipalized before 2007 have been eliminated from the calculation.

Figure 4.
Concentration in the market for the private provision of urban water service, 2000-2020. Observed and counterfactual (no acquisitions) concentration indices

Panel a. Hirschman-Herfindahl Indices (HHI)



Panel b. Concentration Ratios (CR)

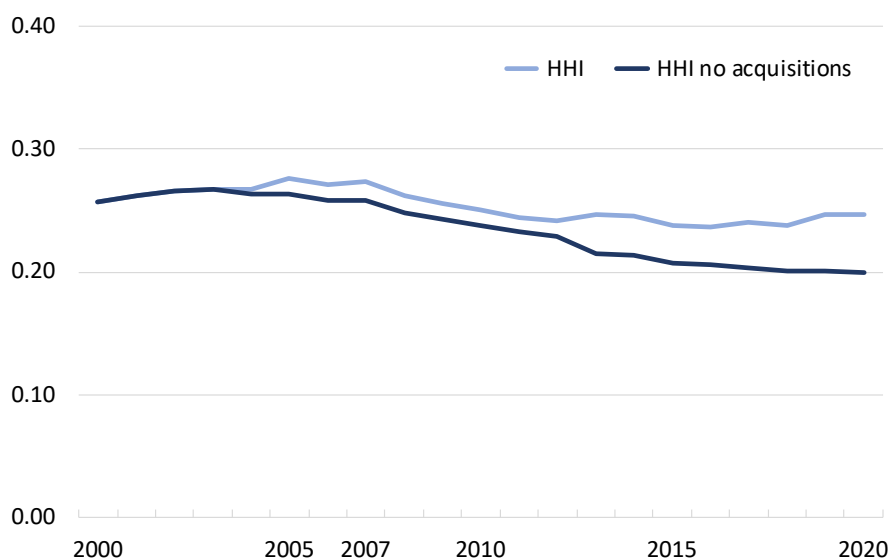


Source: Own elaboration.

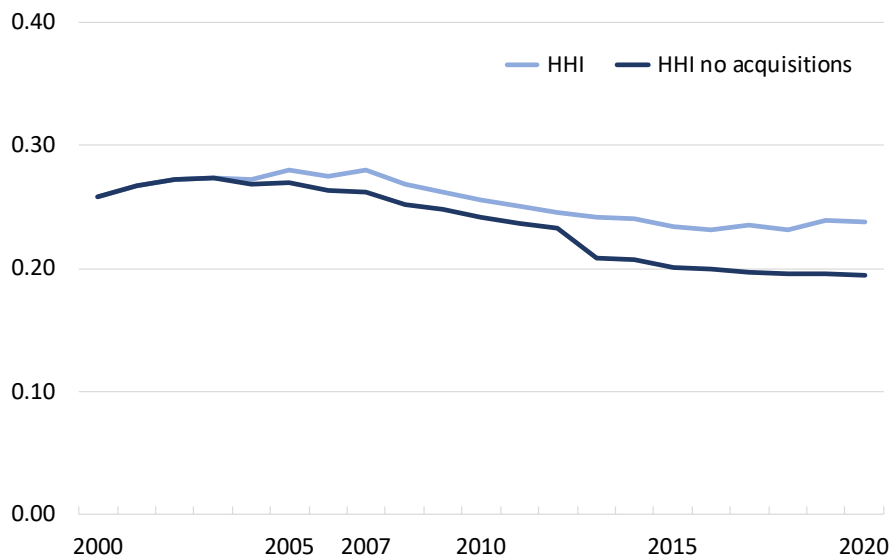
Figure 5.

Concentration in the market for the private provision of urban water service, 2000-2020. Observed and counterfactual (no acquisitions)
Hirschman-Herfindahl Indices (HHI) in alternative markets

Panel a. Private



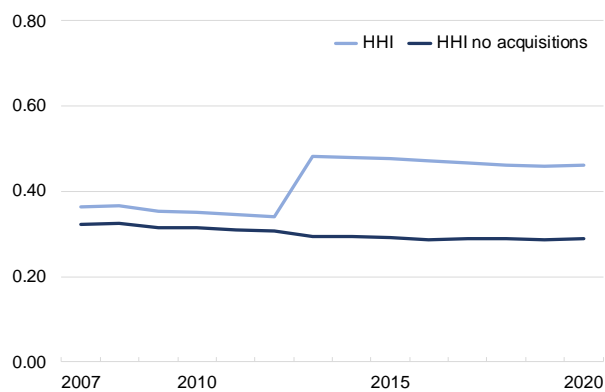
Panel b. Private and mixed with majority private



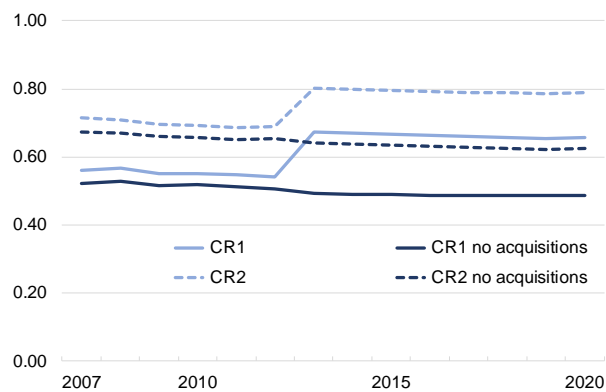
Source: Own elaboration.

Figure 6.
Concentration in the market for the private provision of urban water service in Catalonia, 2007-2020. Observed and counterfactual (no acquisitions) concentration indices

Catalonia - HHI



Catalonia - CR

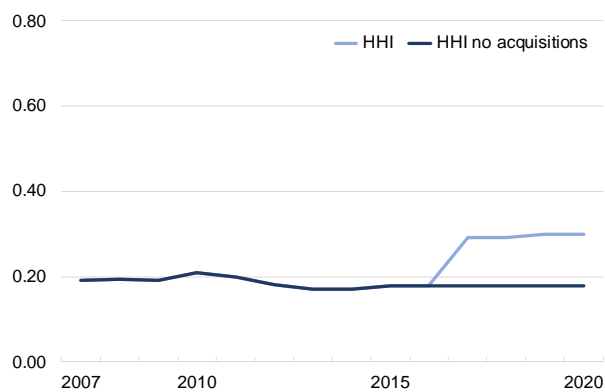


Source: Own elaboration.

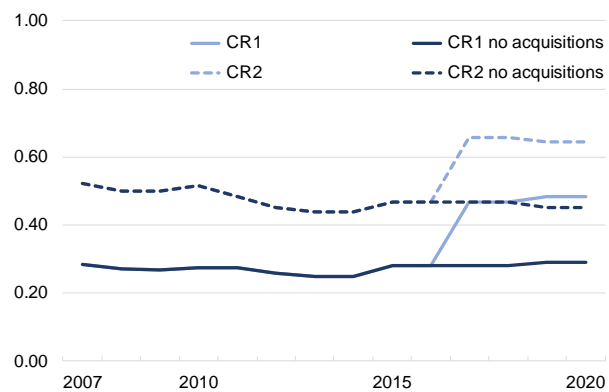
Figure 7.

Concentration in the market for the private provision of urban water service in Cantabria, 2007-2020. Observed and counterfactual (no acquisitions) concentration indices

Cantabria - HHI



Cantabria - CR

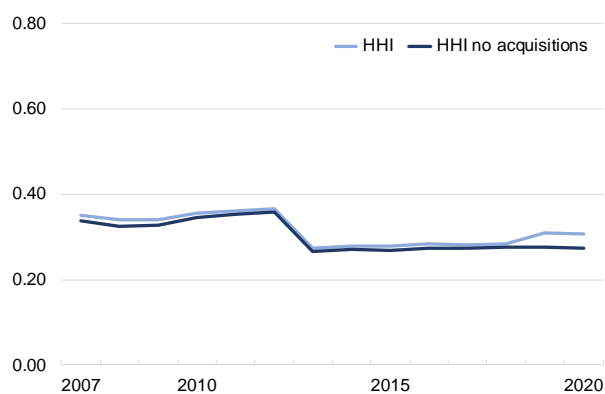


Source: Own elaboration.

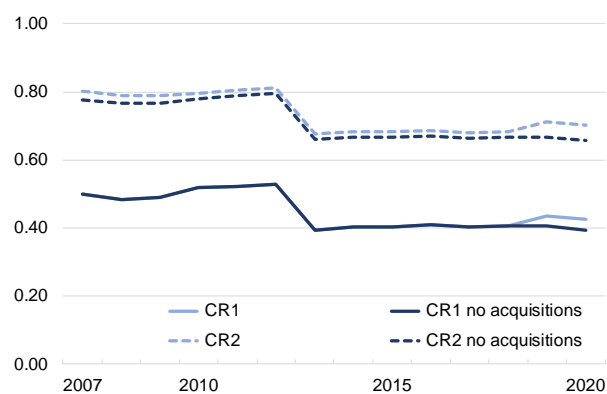
Figure 8.

Concentration in the market for the private provision of urban water service in Andalusia, Extremadura and Castile-La Mancha, 2007-2020. Observed and counterfactual (no acquisitions) concentration indices

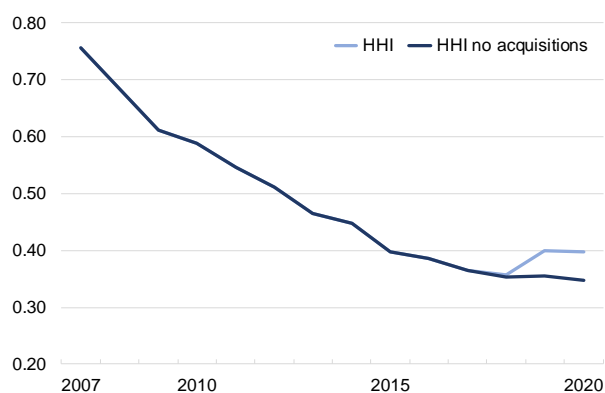
Andalusia - HHI



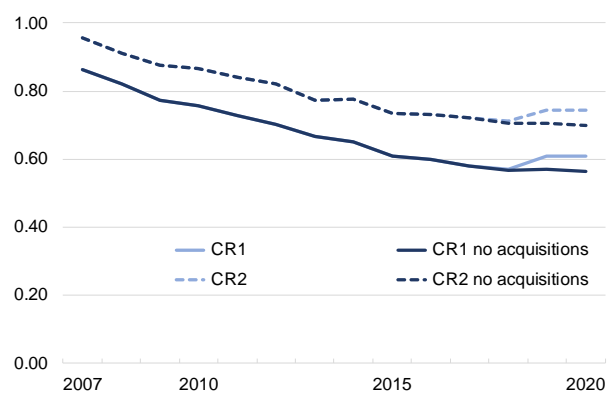
Andalusia - CR



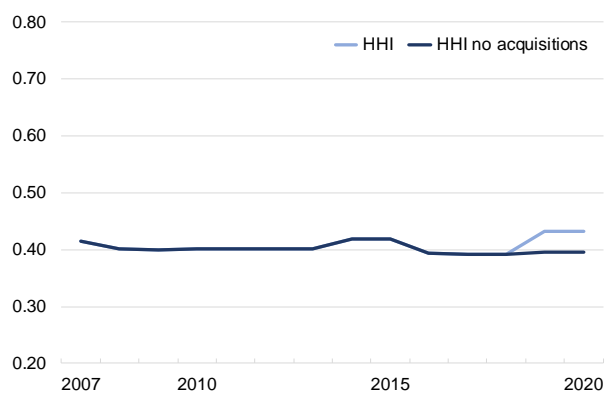
Castile-La Mancha - HHI



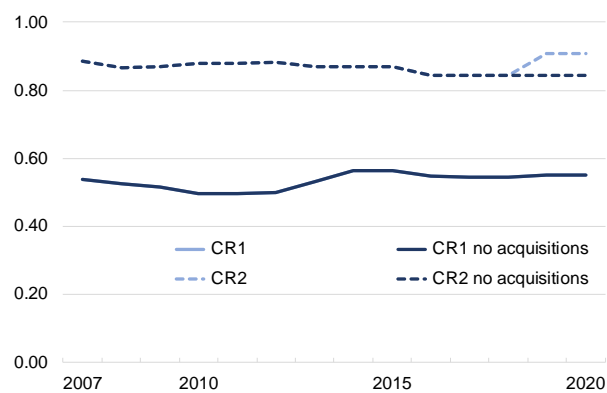
Castile-La Mancha - CR



Extremadura - HHI



Extremadura^a - CR



Source: Own elaboration.

^a The CR1 of Extremadura does not change in the counterfactual scenario because the acquiring company was not a market leader, either before or after the transaction.

APPENDIX

Table A1.

National and regional market shares of the two leading companies for the private provision of urban water service, 2020^a.

		Municipalities (%)	Population (%)
Spain	AGBAR	42.0	50.5
	Aqualia	25.1	25.0
Andalusia	Aqualia	42.0	54.3
	AGBAR	28.5	32.2
Cantabria	AGBAR	51.5	26.5
	Aqualia	18.2	55.2
Castile-La Mancha	Aqualia	60.4	41.4
	AGBAR	18.7	30.1
Castile and León	AGBAR	45.6	57.4
	Aqualia	43.3	35.6
Catalonia	AGBAR	66.4	82.0
	Aqualia	7.6	6.5
Extremadura	AGBAR	57.2	39.3
	Aqualia	35.2	47.4
Galicia	AGBAR	37.7	37.6
	Aqualia	15.8	31.3
Murcia	Aqualia	35.7	15.1
	AGBAR	33.3	71.4
Valencian Community	Global OMNIUM	41.9	41.9
	AGBAR	23.2	38.3

Source: Own elaboration.

^a These percentages are calculated for all municipalities with private provision in 2020, the only year in the period analysed for which information about the entire population is available.