TESIS DOCTORAL EUROPEA / EUROPEAN DOCTORAL DISSERTATION

THE PUBLIC CHOICE OF URBAN WATER SUPPLY MANAGEMENT

Departamento de Economía Aplicada

Facultad de Ciencias Económicas y Empresariales

Universidad de Granada

Alberto Ruiz Villaverde

2011

Editor: Editorial de la Universidad de Granada
Autor: Alberto Ruiz Villaverde
D.L.: GR 2261-2011
ISBN: 978-84-694-3619-6

Departamento de Economía Aplicada
Facultad de Ciencias Económicas y Empresariales
Universidad de Granada

Dr. D. Juan de Dios Jiménez Aguilera.

Profesor Catedrático de Universidad
Departamento de Economía Aplicada
Fac. CC. Económicas y Empresariales
Universidad de Granada

Granada, 2011

D. Juan de Dios JIMÉNEZ AGUILERA, Director de la Tesis: 'THE PUBLIC CHOICE OF URBAN WATER SUPPLY MANAGEMENT' de la que es autor D. Alberto RUIZ VILLAVERDE,

AUTORIZA la presentación de la referida Tesis para su defensa y mantenimiento de acuerdo con lo previsto en el Real Decreto 56/2005, de 21 de enero, emitiendo el siguiente informe:

Que la memoria de tesis doctoral 'THE PUBLIC CHOICE OF URBAN WATER SUPPLY MANAGEMENT', que presenta D. Alberto RUIZ VILLAVERDE, ha sido realizada bajo su dirección, reuniendo a su juicio las condiciones necesarias para su presentación y posterior defensa en sesión pública ante el tribunal que la Comisión de Doctorado designe al efecto.

Fdo.: Juan de Dios Jiménez Aguilera.

Departamento de Economía Aplicada
Facultad de Ciencias Económicas y Empresariales
Universidad de Granada

Dr. D. Francisco González Gómez.

Profesor Titular de Universidad
Departamento de Economía Aplicada
Fac. CC. Económicas y Empresariales
Universidad de Granada

Granada, 2011

D. Francisco GONZÁLEZ GÓMEZ, Director de la Tesis: 'THE PUBLIC CHOICE OF URBAN WATER SUPPLY MANAGEMENT' de la que es autor D. Alberto RUIZ VILLAVERDE,

AUTORIZA la presentación de la referida Tesis para su defensa y mantenimiento de acuerdo con lo previsto en el Real Decreto 56/2005, de 21 de enero, emitiendo el siguiente informe:

Que la memoria de tesis doctoral 'THE PUBLIC CHOICE OF URBAN WATER SUPPLY MANAGEMENT', que presenta D. Alberto RUIZ VILLAVERDE, ha sido realizada bajo su dirección, reuniendo a su juicio las condiciones necesarias para su presentación y posterior defensa en sesión pública ante el tribunal que la Comisión de Doctorado designe al efecto.

Fdo.: Francisco González Gómez.

The

Public Choice of Urban Water Supply Management

Alberto Ruiz Villaverde

2011

To

Nuria Rodriguez

and

My Family

for their immeasurable support

ACKNOWLEDGEMENTS

When one reaches the end of the road he must look back and try to remember all those people without whom it wouldn't have been possible. In my case, I can say I've been hugely fortunate to receive so much from so many people and I have only words of infinite gratitude.

First, I would like to thank my co-supervisor Juan de Dios JIMÉNEZ, for his confidence in me. I had to take tough decisions throughout this process including resigning from secondary education to make the change to higher education. Thanks to him I got the research grant that allowed me to complete this work. Secondly, of course, I am eternally grateful to my other co-supervisor, Francisco GONZÁLEZ, who has always adapted to my work rate and has known how to get the best out of me at all times. I have always benefited from his expert supervision, rigorous attitude to research, valuable advice and extensive knowledge. I would also like to thank him for introducing me into the research world and giving me the opportunity to meet great researchers and receive research training.

I'm very grateful for the working environment created by the board of directors at the Department of Applied Economics (University of Granada). Before this work, other colleagues had presented very high quality PhD Dissertations. There have been good examples of inspiration and motivation, in the same way I hope this dissertation will also be useful for the rest of my colleagues who will defend their dissertations in the near future.

I also owe a great deal to Andrés PICAZO, Jorge GUARDIOLA and Miguel A. GARCÍA with whom I've worked very closely. I've learnt many things from them and

I'm still learning many things every time we have a conversation. They have carefully read preliminary versions of this dissertation, suggested extensions and helped me to see the limits of the economic arguments of my work. I also thank them for generously accepting to be my reviewers and for helping me to improve the presentation of the economic ideas in my dissertation. I always feel very lucky to have had the opportunity to work and interact with these excellent scholars over these years. I must also acknowledge the help provided by specialised translator Tony Little, who has reviewed the English of all chapters.

This dissertation benefits from comments and discussions with several friends and colleagues from different conferences and other institutions.

In particular, *Chapter 1, "Analysis of urban water management in historical perspective: evidence for the Spanish case"* benefits from the generous help of Juan M. MATÉS (University of Jaén), who provided us with a lot of books and material to begin our historical study. I am very grateful to Miguel A. GARCÍA and Francisco GONZÁLEZ for reviewing this chapter, which improved considerably as a result. I would also like to thank Oscar BAJO (University of Castilla-La Mancha) for his comments on a first draft presented at "*XVII Encuentro de Economía Pública (Murcia, February 2010)*", in a session chaired by Francisco COMÍN (University of Alcalá de Henares). Eventually, the paper greatly improved thanks to the comments and feedback from referees of the ***International Journal of Water Resources Development***, where it was published.

Chapter 2, "*Reconsidering privatisation in the Governance of water in Spain*", despite being in second place, this was my first work with Francisco GONZÁLEZ and Jorge GUARDIOLA, to whom I am very grateful for showing me the way forward. We

are also grateful to the reviewers of the journal "***Proceedings of the ICE - Municipal Engineer***", where it was published.

Chapter 3, "Do ideological and political motives really matter in the public choice of local services management? Evidence from urban water services in Southern Spain" can be considered the core of this dissertation. This chapter has involved a huge effort in close collaboration with Andrés PICAZO (University of Valencia), Francisco GONZÁLEZ and Jorge GUARDIOLA, to whom I am very grateful for the valuable lessons that I have learnt. The chapter also benefited from comments from María A. GARCÍA (Laboratoire d'Economie des Ressources Naturelles, INRA[1] & University of Toulouse) on a first draft presented at "*XVII Encuentro de Economía Pública (Murcia, February 2010)*"; comments from Alban THOMAS, Celine NAUGES, Arnaud REYNAUD, María A. GARCÍA and Klenio BARBOSA (Laboratoire d'Economie des Ressources Naturelles, INRA & University of Toulouse) at *a research seminar in the Toulouse School of Economics (April 29, 2010)*; comments from Germá BEL (University of Barcelona), at *"XIII Encuentro de Economía Aplicada (Sevilla, June 2010)"* and comments from Christopher G. REDDICK (University of Texas at San Antonio, USA) and María A. GARCÍA at "*Primer Encuentro de Especialización para la Investigación en Economía y Empresa (Facultad de Ciencias Económicas y Empresariales de la Universidad de Granada, September 2010)*". Finally, we would like to thank the conscientious work of the referees of the journal ***"Public Choice"***, where this work has been accepted for publication.

I would like to thank my mother, Carmen, for her support and unconditional love. She has been the one who gave me the passion for this profession. Actually,

[1] INRA, L'Institut National de la Recherche Agronomique (France).

researching has become really interesting for me, but I still prefer teaching because that's what makes me happiest in life.

Without the support of my father, Ricardo, and my brothers, Ricardo and Gonzalo, it would have been much more difficult to reach the end of this journey, if not impossible. I must also acknowledge the support of my grandmother María and my aunts Ángeles and Luz. A big thank you to Nuria for her limitless patience listening to all the economics stories related to this work and all my complaints when times were tough.

CONTENTS

LIST OF TABLES AND FIGURES

INTRODUCTION

The urban water supply of ancient Rome was based on the construction of a series of aqueducts by the State to transport water to cities, mainly those that had established themselves as religious and commercial centres. During the Middle Ages, local officials or the Crown performed those necessary works for water supply. This practice continued throughout Modern History, defined as a public responsibility.

Many of the current problems with public service provision arose in the 18th and 19th centuries. The advances of the Industrial Revolution were attached to strong growth in population, urbanization and large agglomeration that caused congestion and even the collapse of public services. The water sector is one of the clearest examples of such a collapse, both as regards the supply and also water sanitation. Undoubtedly, the modernization of this sector may be seen as one of the most important challenges in the history of Spanish municipal governance. Accordingly, the onset of water sector modernization in Spain becomes an interesting starting point for analysis and reflection on future water service management and the cyclical dynamics observed in the contract processes that have been taking place since the late 19th century.

Throughout this study we raise questions while also trying to find answers related to the factors behind the privatization and municipalization of urban water supply management in the twentieth century. Also, as part of the findings, this research has attempted to respond to the question 'what can be learnt from the Spanish case?'

Integrated water system is characterized by a high initial investment and high fixed costs of maintenance and renewal of infrastructure. The economies of scale associated with this industry make the situation more efficient with the existence of a

single supplier. It is assumed in the literature that the industry is structured around local natural monopolies. Therefore, the water sector is very sensitive to public regulation and political control.

In this sense, there is a permanent debate about the adequacy of the legal form of public services management, including the urban water service. Public interest theories advocate regulation of public services, based mainly on market failures. On the other hand, private interest theories back the introduction of competition as a way to increase the efficiency of service management. In recent years, research in both directions can be found.

In this vein, it should be stressed that in practice, countries have chosen different ways to provide urban water services. In some countries there is clear opposition to private participation in the water industry. This is the case, for example, in Austria, Belgium, Canada, Denmark, Finland, Iceland and Ireland among others. In contrast, the UK and Wales opted for full privatization of all activities related to the provision of water services in 1989. And finally, other countries opted for an intermediate alternative. For example, in countries like France and Spain, councils have the jurisdiction to choose the legal form of urban water service management.

The main aim of this dissertation is to contribute to the extension of the analysis on local governance from an economic and eminently empirical approach, focusing on urban water supply management in southern Spain. More specifically, this research examines motivational and explanatory factors that influence the decision-making processes of local politicians. It pays special attention to the ideological and political side of decisions, in contrast to other empirical studies published previously. Additionally, another important aim of this dissertation is to analyze the decision-

making process in the partial privatization of urban water service management from a case study. We propose the use of a mathematical tool that brings analytical rationality to the decision making-process of local policymakers.

In order to achieve the goals of this dissertation we have performed the following research activities: (1) we have conducted an extensive review of the literature (theoretical, historical and empirical) in the field of local governance and in particular in the field of urban water supply management. (2) We have performed several studies, one from a historical perspective and two empirical analyses. On the one hand, a multivariate econometric analysis has been conducted, namely a two-equation probit selection model applied to a database belonging to the Autonomous Region of Andalusia. The aim was to reflect on factors that influence the choice of water supply management. On the other hand, a multi-criteria ex-post analysis has been performed and applied to a case study –the partial privatization of water services in the city of Granada (1997)–; the aim was to analyze the criteria that influenced this decision-making process.

Having established the context of the research, identified the object of the study, presented the main goals and commented on the methodology used to accomplish them, the following section presents a series of abstracts that makes up the structure of this dissertation.

ABSTRACT

In order to meet the main aim defined in the previous section, this dissertation is divided into five chapters. It should be noted that the first three chapters which follow are adaptations of articles which have been published or accepted for publication in specialist journals. The fourth chapter is an adaptation of a work in progress published in Working Papers in Applied Economics (WPAE). Chapter 5 summarizes and concludes.

Chapter 1 "Analysis of urban water management in historical perspective: evidence for the Spanish case"[2]

The level of public and private involvement in economic activity in societies has changed over time. One may talk about the existence of a cyclical trend in which the most important periods of public management are replaced by periods in which private management dominates the situation. This phenomenon may also be observed in local areas. Some authors have pointed out the existence of an alternation in the provision of municipal services, resulting in periods dominated by public management compared to other stages dominated by private management. In order to illustrate this cyclical trend at local level, this chapter intends to analyze the evolution of the governance of the Spanish water supply since the mid-19th century to the present day. Recent evidence from the industry suggests the possibility that a further change in the trend currently be being witnessed.

[2] **Analysis of urban water management in historical perspective: Evidence from the Spanish case** (with Miguel A. García-Rubio and Francisco González-Gómez). *International Journal of Water Resources Development,* 2010, 26(4), 653-674.

Chapter 2 "Reconsidering privatization in the governance of water in Spain"[3]

Spain liberalised the governance of municipal services after implementation of law 7/1985 of 2 April 1985, which regulates local government. Since then, many Spanish municipalities have chosen to privatise their urban water service. However, complete privatisation of the water service is now being questioned. The number of water services becoming completely privatised is decreasing and some local governments have changed their initial decisions and reverted to public management. This article explores why privatisation in Spain is being reconsidered. The process of privatisation of water services in Spanish cities and the causes of the re-governance process that some local governments have undertaken are reviewed. With reference to the option of privatisation, different management alternatives chosen by local governments are also considered, as new forms of governance such as mixed public–private partnerships and associationism are steadily acquiring an important role.

Chapter 3 "Do ideological and political motives really matter in the public choice of local services management? Evidence from urban water services in Southern Spain"[4]

According to the literature, local government decisions regarding the management of municipal services are mainly based on pragmatic reasons, ideological and political motives having little influence. However, in some services, such as the urban water service, ideological and political factors could play a more relevant role when it comes

[3] **Reconsidering privatisation in the governance of water in Spain** (with Francisco González-Gómez and Jorge Guardiola). *Municipal Engineer*, 2009, 162(3), 159-164.

[4] **Do ideological and political motives really matter in the public choice of local services management?** (with Andrés J. Picazo-Tadeo, Francisco González-Gómez and Jorge Guardiola). *Public Choice*, 2011. In press.

to deciding the management alternative. This chapter studies the influence of ideological and political motives on the choice of management for the urban water service in 734 municipalities located in the south of Spain, with data for the period 1986-2006. Our contribution is twofold. Firstly, we use a considerably more detailed set of variables to represent ideological and political motives than previous research. Secondly, the variables that explain local politicians' decisions are observed at the time decision-making occurs, rather than at a later date. We find that, beyond pragmatic reasons, ideological and political motives also matter in explaining the decisions about the management of local water services. Concerning ideology, the two largest parties disputing the centre of the Spanish political spectrum employ similar strategies when choosing a management alternative. However, the city councils governed by the most left-wing party are more reluctant to privatize. Regarding political factors, variables such as stakeholder lobbying affect local government decision making.

Chapter 4 "The public choice of urban water services management: a multi-criteria approach"[5]

Local governments have to take decisions in increasingly complex contexts. Among other decisions, in countries where it is permitted by the legal framework, local policymakers have to choose the type of management of local public services. The importance of the urban water service and the variety of criteria to be considered in the management choice make it advisable that local government should consider the existing tools to rationalize the decision-making. Different Multi-Criteria Analysis (MCA) facilitates decision-making processes in situations where several criteria must

[5] **The public choice of urban water service management: a multi-criteria approach** (with Francisco González-Gómez). *Working Papers in Applied Economics* (WPAE-2011-01).

be taken into account. This chapter applies an Analytic Hierarchy Process (AHP) to analyze the decision on the urban water service management in Granada, city in southern Spain. An assessment through an ex-post analysis is aimed to conclude whether the choice was appropriate and, therefore, whether or not the City Council should reconsider its past decision. The main conclusion is that the decision was consistent.

CHAPTER 1

ANALYSIS OF URBAN WATER MANAGEMENT IN HISTORICAL PERSPECTIVE: EVIDENCE FOR THE SPANISH CASE

"Economic history is about the performance of economies through time. The objective of research in the field is not only to shed new light on the economic past, but also to contribute to economic theory by providing an analytical framework that will enable us to understand economic change"

Douglass C. North (1994)

1. Introduction

Local government obligations have increased over time. Councils are currently responsible for the provision of a wide range of services in their municipalities, ranging from core activities to the proper functioning of cities, such as refuse collection, traffic control or water distribution, as well as activities with social purposes, such as the care of the elderly or the development of leisure activities.

Regarding the provision of public services, the choice of an appropriate management, either public or private, is a recurring debate. The existence of opposing arguments and the absence of conclusive empirical evidence in favour of one kind of management or the other have prompted several studies since the mid-80's to explain what factors influence the choice of management for local public utilities. Recent international surveys suggest that local governments make the decision considering economic, financial, ideological and political factors, (Biswas, 2006; Varis *et al.*, 2006; Bel & Fageda, 2007, 2009).

Research explaining the decisions of local governments using econometric techniques analyse what happened in the last quarter of the 20th century, although many of these decisions were made much earlier. In the absence of data, only historical studies enable us to approach the motivations of local politicians in their past decisions. One important conclusion reached in studies from a historical perspective is the existence of a cyclical trend in decision-making based on public and private

management alternating. Gómez-Ibáñez (2003) associates this cyclical trend mainly to those services based on network infrastructures which suffer from significant failures in free competition. This situation has been detected, for example, in the case of transport services (Gómez-Ibáñez & Meyer, 1993) or the water supply (Kraemer, 2001). In this same line of reasoning, some authors suggest that we are witnessing a new trend in services provided by local governments in the last decade (Hefetz & Warner 2004, 2007; Warner, 2008; Chen, 2009).

To illustrate the cyclical trend in local government decisions, including the possible change in trend noted by some authors in recent years, this chapter analyzes the evolution of the governance of the Spanish urban water supply. Despite the lack of data that makes it impossible for us to apply econometric techniques to past periods, this chapter presents economic, political and institutional arguments that serve to explain the decisions made by local governments in each period (Table 1.1).

Table 1.1 Water Supply Governance in Spain

	1st Stage. The incursion and consolidation of entrepreneurship (1840-1938)	**2nd Stage. The reversal in the management of the service (1939-1984)**	**3rd Stage. Return to outsourcing (Since 1985)**
Explanatory factors	- *Budgetary imbalances and lack of funding* - *Political instability* - *Ideological attitudes*	- *Market failures* - *Incomplete contracts and transaction costs* - *Political Processes and Ideological Attitudes*	- *Fiscal Restrictions* - *Cost reduction* - *Political Processes and Ideological Attitudes*

Source: Own elaboration.

The start of the study period is determined by the development of the *Modern System of Water Supply* in Spanish cities (Matés, 1999). This issue is addressed in the second section. The factors that explain the decisions of local governments in each

historical period are explained in the third, fourth and fifth sections. The sixth section raises the possibility that a new change of trend may be witnessed. The seventh section shows some strengths and weaknesses of the Spanish model. The final section offers some concluding remarks.

2. The need to modernize the urban water supply

The 18th and 19th centuries witnessed the recurring collapse of traditional water supply and sanitation systems in many European cities. The causes must be sought in the sharp increase in water demand and in the growth of urban agglomerations.

New and growing industrial needs led to a sharp increase in water demand. People initially attempted to solve this problem by strengthening the *Classic System of Water Supply*, (Matés, 1999). For instance, more wells and water sources were constructed and the services of vendors providing water were increased.[6] All these solutions were costly and inadequate and, needless to say, they did not prevent a decline in the available flow in wells and the consequent problems with the water supply.

The strong growth of cities and excessive urban concentration, with the emergence of large diseconomies of concentration that were not present in rural areas, ended up collapsing the sanitation system and creating a true classic situation of environmental neglect (Matés, 1997, 1999). Contamination of drinking water and the occurrence of severe unsanitary conditions resulted in increased mortality due to epidemics of typhoid fever, cholera and dysentery (Glick, 1987; Troesken, 2006).

[6] The water boy or vendor providing water (*i.e.,* "aguador" in Spanish), was a profession in Spain that existed well into the 20th century. This job consisted of carrying clay jars of water, often with the help of a mule, to the city squares or the higher areas of the city where access to water was more difficult. Ultimately, it was street selling of water permitted by the municipal authorities.

Overcoming this situation was only going to be possible by modernizing water supply and sanitation services. From a technical point of view, this involved the construction of large dams and aqueducts for storage and transport of water over long distances; the establishment of distribution networks and sanitation; the introduction of new systems for water filtration and disinfection (*i.e.*, chlorination); the settlement of pressurized piping; the diffusion of mechanical devices to pumping water, or the use of valves to regulate the flow of water.

In Spain, it took a long time to adopt this necessary process of modernization in all matters relating to treatment, water supply and sanitation. Not only was this a technical challenge, but also a financial and organizational one. Dealing with gaps in supply and sanitation infrastructure entailed a large investment in fixed capital, and all in a context in which policy-makers –the city councils– were under severe financial constraints inherited from the Crisis of the Old Regime.

In Spain, some authors have come to distinguish three stages according to the unequal importance of private enterprises in the management of the urban water supply (Matés, 2004). The first stage (1840-1938) witnessed the start of entrepreneurship in industry. However, it was not until the early twentieth century when this management strategy became consolidated. The second stage (1939-1984) is characterized by a strong process of municipalization due to both social and political reasons. The third stage (from 1985 onwards) has brought further growth in private participation in management, justified on the grounds of efficiency (Table 1.1).

3. First stage: the initiation and consolidation of private companies in the water sector (1840-1938)

In the late 19th century, Spanish cities still had to perform tasks such as the construction of water supply networks and resolving technical problems, the establishment of an efficient and stable organizational model, as well as the stabilization of users and the spread of the water supply (Matés, 1998). The complexity and magnitude of the investments required to modernize urban water utilities placed 19th-century Spanish politicians in the dilemma of choosing between continuing to manage the service directly or to delegate management to private companies.

Even though some private business initiatives had been detected in the sector as early as 1841,[7] a more determined push from private initiatives did not occur until 1865-1872. It could be stated that Spain has lagged behind other countries such as France or Great Britain where the development of this sector is concerned. This delay is primarily due to a marked lack of entrepreneurship, an inadequate domestic market and a lack of real resources needed to finance the modernization of this sector.

From that moment until the end of the century, 83 private companies were established in Spain (Table 1.2), located mainly in medium-sized and large cities. However, there were also some cases of private initiatives in small cities and, conversely, in some important cities –Almeria, Bilbao, Zaragoza, Malaga, Las Palmas, Palma de Mallorca and San Sebastian– private companies were not present until 1900 (Matés, 1997).

[7] *E.g.*, the company "Mina Pública de Aguas de Tarrasa S.A." was established in 1841.

Table 1.2 Urban water supply companies established in Spain (1841-1969)

Period	*Number of companies Established*	*Percentage of companies established*
1841-1900	83	30.63
1900-1938	166	61.25
1939-1969	22	8.12
Total	**271**	**100**

Source: Compiled from Matés Barco (1997).

Nonetheless, private participation in urban water management during these years was weak and supported significantly by foreign investment. It was normal to see companies with both domestic and foreign capital. French investors were mainly responsible for the foreign investment in water services in Spain, followed by British and Belgian investors. Essentially, the French, British and, albeit to a lesser extent, Belgian economies dominated the Spanish process of modernization (Table 1.3). On the one hand, we must consider that Spanish entrepreneurs did not make a firm commitment by investing in an emerging sector in development. In addition, the small and medium-sized enterprises that were established at the beginning in the sector often proved to be unsustainable. On the other hand, British, French and Belgian entrepreneurs already had a thorough knowledge of the sector as well as major builders, managers and investors who were able to recognize the potential of scale economies in the sector (Linatti Bosch, 1966).

Table 1.3 Estimation of foreign investment in the water sector, 19th century Spain

Country	*Total investments (in pesetas at the time)*	*Percent of total foreign investment*
France	19,768,750	48.60
England	14,059,900	34.57
Belgium	6,843,750	16.83
Total	**40,672,400**	**100.00**

Source: Adapted from Costa (1981).

This dependence on French and British capital, which came to resolve the scarcity of investment that hindered the development of this sector in Spain, can be contemplated in a broader context as a result of the strong linkage of trade with these countries. Throughout the 19th century, exports to both countries ranged between 45 and 70%, and imports between 35 and 60% (Nadal & Carreras, 1990). In fact, in those years, entrepreneurs from these countries invested major capital in other sectors, such as mining.

This management strategy was consolidated during the first third of the 20th century. By 1938, 166 private companies responsible for managing water supply had already been established in Spain (Table 1.2), many of which were large-scale operations. In this period, the development of the water supply in Spain was strongly associated to the great public urban projects of the time –docks, urban enlargements, renewals of buildings, etc. Furthermore, the extension of the water supply network to new urban areas provoked the immediate re-evaluation of sites and properties.

However, what were the reasons behind delegating the management of a service traditionally provided by city councils to private companies during this period? The literature suggests three explanatory factors which are detailed below.

1) Budgetary imbalances and inadequate financial resources

Since the early 19th century, the impoverished state of Spanish municipal finances was reflected in the financial diversity, heavy indebtedness and the guardianship of a State interested in local revenue (Comín, 1996). There are several possible reasons for this situation. Firstly, the sale of municipal assets, which had begun during the Peninsular War (1808-1814), continued in subsequent decades and escalated during the Carlist War years (1833-1876). Secondly, although the 1845 tax reform achieved an increase of municipal revenues, the needs generated by the large influx of people into cities resulted in these financial resources remaining inadequate. Finally, the subordination of Local Finances to the State was consolidated (García & Comín, 1995). During the 19th century, the increase in municipal responsibilities –primary education, charity, local public works, landscaping, etc.– was not accompanied by a corresponding transfer of state taxes. Thus, the financial capacity of municipalities was even further restricted.

Moreover, the necessary investments to establish the service of urban water supplies were disproportionate to the resources in local government coffers. Between 1900 and 1905, the construction of water-supply networks required an average investment of 2.31 million 'pesetas'[8] per project (or an investment of 41.5 'pesetas' per inhabitant), which were amounts at times well in excess of the annual municipal budget, (Núñez, 1996).

[8] 1 euro = 166.386 pesetas

As a result, Spanish councils only managed directly those municipal services that did not require hefty investments. In contrast, the water supply service required substantial investments and also a more complex industrial and commercial organization, so councils ended up delegating this service under concession contracts to private companies (Comín, 1996).

2) Political instability

The Spanish policy of the 19th century was characterized by The Peninsular War, the Carlist conflict and the continuous alternation in power between Moderate and Progressive parties. These circumstances greatly hindered the necessary reform of local government finances. The financing of the foregoing wars demanded incomes from anywhere and the local revenue resources were increasingly utilized for this purpose. Furthermore, a common practice was to reduce municipal taxes in times of peace, as they were considered an obstacle to the recovery of the State. Arguably, the growing indebtedness resulting from the centralization of State Finances eventually put an end to the autonomy of local revenue (García & Comín, 1995).

The arrival of the Liberals to power did not lead to changes in the structure of municipal expenditures. Unlike private companies, which had their own capital and funds, local governments issued debt to fund public works. The main item of expenditure was made up of debt interest, which in cities like Madrid and Valladolid was as high as 30%. In the Ecclesiastical Confiscations of Madoz (1855), the state ended up bankrupting municipalities, as the state did not respect its commitments to repaying the public debt which it had forced them to issue. The centralization imposed left local governments without their own resources and without the possibility of

levying taxes. This led them to surviving on the surcharges they imposed on state taxes, especially since the Restoration (Comín, 1996).

3) Ideological Attitudes

Since the early 19th century, in view of the visible relationship between capitalist development and urbanization, liberal politicians tried to direct private investment towards urban centres. The aim was to reduce the limitations and restrictions imposed on local governments so that they could implement certain urban services. However, in the first half of the 19th century, the private initiative encountered serious difficulties to make large investments. Consequently, the slow modernization of the water supply was not an exceptional case. The same happened to services such as transportation or street lighting.

Moreover, the ideological principles of economic liberalism were compatible with the transfer of public service management to private companies. In that context, private companies were considered more efficient due to not having to go through as much red tape as public companies. Furthermore, private companies were not subject to such rigid budgetary control. In contrast, government agencies lacked flexibility and did not have the management capacity or the financial, technical and human resources to undertake the necessary investments. For the liberal politicians of the time, services which did not have a *sovereign* status and, moreover, were of an economic nature, should be managed by private agents, subject only to general laws and free agreement contracts (Matés, 1998).

At this point, it is worth highlighting some of the most important features of the first stage of the development of urban water management in Spain. It has been shown

that industrial, demographic and urban circumstances in the 18th and 19th centuries forced European countries, and in particular Spain, to modernize the traditional water supply and sanitation system. This modernization process entailed great financial, technical and organizational requirements. However, municipalities were extremely poor, as the country was in the midst of a crisis –The Crisis of the Old Regime– which involved armed conflicts, political turmoil and a large degree of instability.

Until the mid-19th century, the urban water supply was for legal, political and economic reasons predominantly managed directly in Spain as a whole. However, this form of public management became unfeasible in the 19th century, so an alternative solution had to be found involving the introduction of private enterprise in the sector. Nineteenth-century liberal politicians chose to introduce concessions, thus adapting to the legislation in the more advanced countries, which awarded the management of municipal service to private companies through a public auction. Although the service operating contract granted to private companies was considerably long (ninety-nine years), policy makers at the time ensured that service management could revert to public ownership. Presumably, this was the best solution bearing in mind the knowledge and situation in the 19th century in Spain.

The privatization alternative must largely be seen as a necessity at the time. The public sector was incapable of meeting the demands of citizens or modernizing the water supply system, lacking know-how and above all capital to carry out the necessary investments. The private sector made it possible to transform the urban water supplies in many Spanish cities, which later acted as models for other areas in Spain.

4. Second stage: the municipalization of the water supply (1939-1984)

While during the 19th century concession and lease arrangements were considered the most appropriate form of urban service management, this began to be questioned on a widespread basis in the first third of the 20th century. But while the municipalization of water utilities became more popular in theoretical terms, there were two important obstacles in practice. Firstly, the legislative principles advocated for a liberal conception in the organization of urban services. And secondly, the serious financial problems of municipalities limited any action in this direction.[9]

As the 20th century wore on, a strong debate emerged over whether or not to municipalize some local services and more specifically, the urban water supply. The offer made by private companies was considered unstable, expensive and inadequate and potentially contrary to the general interests of the Nation. This controversy was even greater in large cities, where there were major supply problems.

Local services managed by concessionaire companies often suffered major dysfunctions: fraud against Local Public Finance, breach of contract or lack of renovation and improvement in the quality of service provision. Moreover, in the cases where the end of the concession approached, concessionaires were reluctant to make investments in maintenance and improve the service, as there were more difficulties in the short-term to recover the investment. In addition, the lack of supervision and control on behalf of city councils degenerated into situations of shortages, supply cuts and frequent leakages due to aging pipes, leaving a clear picture of efficiency loss by

[9] A clear example on the issue is found in the early and unsuccessful attempt to municipalize 'Aguas de Barcelona' and 'Empresa Concesionaria de Aguas Subterráneas del Río Llobregat'. In 1920, due to the financial inability of the City Council, a consortium of banks bought both companies and established "Sociedad General de Aguas de Barcelona".

concessionary companies. The fact that private companies monopolized the service showed that efficiency was more a question of market structure than a question of public or private management (Comín, 1996).

In a legal context, the establishment of the 'Estatuto Municipal de 1924' (*i.e.,* a Municipal Law), during the dictatorship of Primo de Rivera marked an important shift in trend. This Municipal Law gave more power to local governments and more control over municipal activities. In other respects, state aids and subsidies to carry out implementation works and improvements in the service began to be granted, which is why the first municipalizations in the urban water supply were observed at this time.[10]

However, this local authority process was intensified during the Franco dictatorship. From 1940, county councils, public utility commissions, The Ministry of Public Works and some other public bodies began to subsidize the works of the water supply in a higher percentage of the budgets of each work. Besides, the 'Reglamento de Servicios de las Corporaciones Locales de 1956' (*i.e.,* Local Authority Service Regulations) was passed, which further increased autonomy and local powers and also caused a sharp contraction of private capital in the sector and the gradual withdrawal of concessionary companies. As a result, the obstacles which prevented the municipalization of these services were reduced.

Between 1939 and 1969, only 22 companies were established in the private sector, 8.12% of total companies established between 1841 and 1969 (Table 1.2). In 1950 private companies accounted for just over 32% of the water supply sector, a total of 1,168 entities for water supply. And in 1970 only 7% of water supply services were managed by private companies, which accounted for 25% of the total Spanish

[10] *E.g.,* the water supply was municipalized in Cadiz in 1927 and in Cordoba in 1938.

population supplied (Matés, 1998). However, some private companies established before the Civil War managed to survive the interventionist onslaught (Table 1.4) and also staged implementation and improvement works, albeit to a much lesser extent.

Table 1.4 Survivor companies in 1985

Company	***Year***	**Municipality**
Mina Pública de Aguas de Tarrasa	1841	Tarrasa
Aguas de Barcelona	1882	Barcelona
Aguas de Burgos	1889	Burgos
Aguas Potables y Mejoras de Valencia	1890	Valencia
Aguas de Alicante	1898	Alicante
Omniun Ibérico	1902	Alcira
Aguas de la Coruña	1903	La Coruña
Aguas Potables de Palamós	1903	Palamós
Aguas Potables de Barbastro	1905	Barbastro
Aguas Potables de Alcázar de San Juan	1908	Alcázar de San Juan
Aguas y Alcantarillado de Manzanares	1918	Manzanares
Sociedad Española de Abastecimientos	1918	Valencia
Agua de Rigat	1923	Igualada
Gran Acueducto	1928	Villanueva and Geltrú
Aguas del Rio Besós	1934	Barcelona

Source: Anuario Financiero y de Empresas en España (1985, 65-73).

In view of these facts, what factors explain increased public intervention and the return to direct management of the urban water supply in this period?

1) Market failures

The character of natural monopoly in the urban water supply was a common argument to justify government intervention. The lack of interest from private companies to extend their activities beyond densely populated urban areas, obviously due to the lack of profitability, led to an under-provision of the water supply.

Although the problems of water supply in large cities were never entirely solved, the situation in small cities was even worse. On the one hand, private companies were unwilling to settle in these cities because they were unable to exploit economies of scale. On the other hand, city councils put strong pressure on private companies through tight controls on water rates. Finally, the Councils in smaller cities did not have sufficient resources to carry out the extension and improvement works required. Thus, investments by small municipalities were reduced to the installation of some public drinking fountains and water holes, or the construction of a public washhouse.

To address the backlog in the water supply in small cities, the *National Supply Plan of 1966* estimated an investment required of 120,000 million 'pesetas' between 1966 and 1981. The overall situation was not very propitious. Out of the 1,500 surveyed population centres –header counties and areas of expansion– 32% did not have drinking water supplied to their homes, 48% had no distribution network and 75% had no purification plant. Average water consumption was 102 litres per inhabitant and per day, whereas 60% of the population lacked sewage services and 78% had no sewage treatment plant (Matés, 1998). In these circumstances, private companies were unable to

participate in the benefits of improving this service, so they would not have the same incentives as local public bodies would to invest in expanding and improving the service.

2) Incomplete contracts and transaction costs

Throughout the modernization of water utilities, dominated by the private sector, not only were regulations relatively lax, but city councils were also unconcerned about whether or not concessionaire companies complied with the terms of the contracts they had signed. However, greater control and supervision of the service would have meant an increase in transaction costs making the provision of the service less efficient. In addition, the financial situation of city councils was not at its best to carry out such practices. It is also very likely that municipalities were not aware of the limitations of competition in network services, especially for the urban water supply, which is reflected in long concession contracts of up to 99 years.

Furthermore, irregularities were quite common in this period: missed deadlines, few bidders in public auctions, suspiciously easy conditions for contract negotiation, together with a large presence of local politicians in this type of business and no apparent interest in defending the rights of citizens (Antolín, 1991). In short, there was hardly any public control of contract compliance, so private companies, both domestic and foreign, had total freedom to develop their own business policies.

Consequently, not only was there a lack of investment in maintenance and improvement of the service. Municipal governments were incapable of regulating and controlling concessionaires, which meant that many city councils eventually ended up managing the municipal urban water supply themselves.

3) Political Processes and Ideological Attitudes

The process of intense urbanization and industrialization continued in Spain in the 20th century. This process had always been associated with a strong increase in water demand for both domestic and industrial uses. Urban water utilities were often confronted with severe systemic problems. To meet this rising demand, large investments were needed in works related to the water supply, such as new projects for dams and long aqueducts. However, the country had chosen a more intense economic nationalism since Primo de Rivera's dictatorship and especially during Franco's regime, regardless of whether or not concessionaire companies could handle these investments (Matés, 1998).

The 'Confederaciones Hidrográficas' *i.e.*, Regional Water Authorities, whose mission was to ensure the availability and quality of water for different demands, were created during the second decade of the 20th century. As a result, the control of the urban water supply was left in the hands of a group of state officials who dictated the policies to be followed. This new situation caused the displacement of private enterprises when making important decisions concerning this sector.

Moreover, in the mid-20th century, there was a strong controversy over water rates. Water supply companies argued that the cost of the service should be borne by users (Linatti Bosch, 1966). However, during Franco's regime, rates were frozen due to, among other reasons, the need to establish anti-inflationary policies. This move led to a loss of corporate profitability in the sector and also hindered the technological renovation and expansion of supply networks. Both factors were behind the reasons for less concession contracts being signed, as well as the subsequent municipalization of the urban water supply during this period. Finally, concession contracts were due to end in

the second half of the 20th century, especially for those concessionaire companies which had started their activity in the last third of the 19th century. In most cases concessions were not extended. Nevertheless, as water rates could not be updated, the service was sometimes returned to local councils before contracts had expired.[11]

Likewise, this second stage is characterized by government intervention in the management of the urban water supply in many Spanish cities. Private management had been under questioning since the beginning of the 20th century; however, it is not until the late 1920s when the first processes of municipalization were observed, although this trend was most apparent in the 1940s.

The reversion of urban water management to public ownership was largely due to problems that emerged after the consolidation of the private sector in the industry. In the 20th century, major shortcomings were observed in the provision of water services, possibly due to the monopolistic structure which shaped the water industry. Some of the major dysfunctions included underinvestment in maintenance and improvement of service quality, which was even more visible as the end of operating contracts approached; breaches of contract by concessionaires; fraud against the local public finance. We must also take into account the technical and financial inability of local authorities to supervise the business activities of concessionaires, which degenerated into situations of shortages in certain areas of cities. Globally speaking, the most serious problem perceived at this stage was the under-provision of the water supply in most of the small municipalities in the country.

Despite all the problems discussed, it is difficult to know whether there were solutions for these problems while still maintaining the share of private management in

[11] One example of a reversion to the local council before contract expiry was the English company Seville Water Work Co. Ltd., which supplied water to Seville and Alcalá de Guadaira.

the sector. Therefore, political and ideological factors played a key role in explaining the process of municipalization at the time. Since 1924, but especially since the end of the Spanish Civil War, there was an ideological bias toward an '*exacerbated economic nationalism*' in which two aspects stand out for this study: (1) the expulsion of foreign capital from the country and, (2) the return to public control of local services. Moreover, the huge postwar economic difficulties and lower living standards forced governments to freeze water rates. This alone ended up strangling the profitability of private companies, accelerating their exit from the sector.

There is no doubt that government intervention in the water sector at this time corrected some of the shortcomings of private companies acting in a monopolistic scenario in which the rules were too lax and there was no effective control on behalf of local authorities. Furthermore, universal access to water as a priority goal was proposed by the intervention of policy-makers. In contrast, the greatest drawback of this intervention policy was the strong dependence of the water sector on government subsidies. Over time, this could fuel inefficient public management of the service and cause a clear lack of independence and self-sufficiency on behalf of Local Governments in this area.

5. Third stage: the return to outsourcing management (since 1985)

Since 1985, although more rapidly since the 1990s, Spanish city councils have returned to outsourcing the management of the urban water supply, a situation to which the new legal framework has undoubtedly contributed. After the implementation of the law 7/1985 of April 2, which regulated local government, the responsibility for this service was maintained in the hands of city councils. This allowed them to choose between

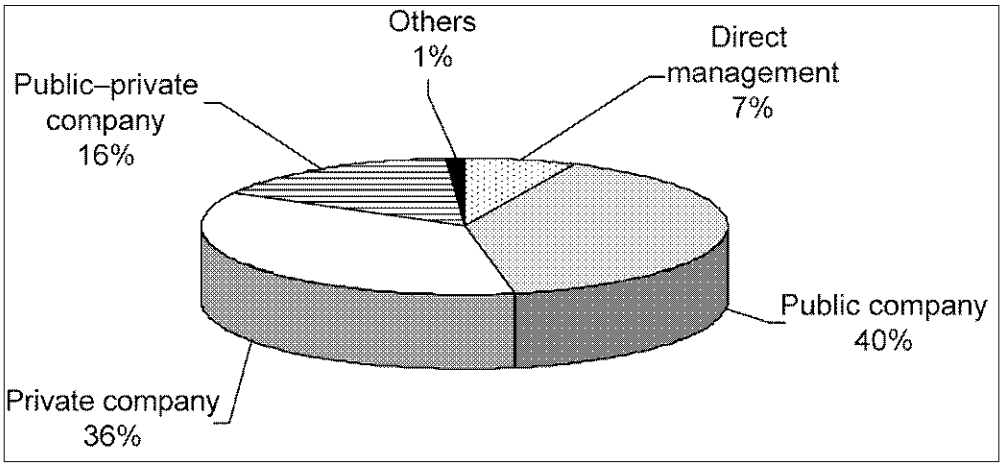
different forms of governance, mainly, direct management or delegating this task to either a public company, a private company, or a public-private partnership.

Unlike previous periods, we have more and better statistical information on the incidence of different forms of urban water management in Spanish municipalities at this stage. All this information is based on the design of surveys, although none of these are censuses (this explains why the results obtained from various sources do not coincide entirely). Of all the available surveys, AEAS[12] uses the largest sample, making it the most frequently used in the literature (Soler, 2003), although not without certain problems. For instance, the earliest surveys –from 1992, 1994 and 1996– show erratic results regarding the percentages of people who were served by different forms of ownership in management. This is probably due to the significant bias that these early surveys showed because of the low level of response to questionnaires.

Recent data show many local governments opted for private management of the service, mainly in the 1990s. In some cases the service was privatized completely, while partial privatization was less frequently chosen (mixed public-private company). In terms of population served, public companies manage the service for 40% of the population, private companies for 36% and mixed companies for 16% (figure 1.1).

[12] AEAS: Spanish Association of Water Supply and Sanitation (AEAS is the Spanish acronym).

Figure 1.1 Importance of the various management styles in the water service in Spain according to population served. Data in percentages



Source: AEAS (2006). Data from 2004. Own elaboration.

Once again the question of what factors explain this upward trend in privatist positions arises. In recent years there have been several empirical studies that have addressed this same issue for the Spanish case (Bel & Miralles, 2003; Bel & Fageda, 2008; Bel & Warner, 2008; González-Gómez & Guardiola, 2009; Miralles, 2009; González-Gómez et al., 2010). Although the debate is not closed, some of the most frequently cited causes are summarized below.

1) Fiscal Restrictions

The previous phase (1939-1969) is characterized by an economically strong state intervention. As regards the water sector, these interventions resulted in strong control of activity and in a firm policy of state aid. However, despite the activity of the General Management of Water Resources, the processing, construction and operation of works related to the urban water supply was largely insufficient (Matés, 1998).

In the late 1970s, political instability caused by the change of regime, the economic crisis and inflation, eventually determined a major tax reform. The main objectives of this reform were to reduce public debt and curb inflation. This new context was a major constraint on government subsidies to municipalities and city councils were subjected to two important financial constraints. On one hand, a limited capacity to generate their own resources and, on the other hand, a drastic reduction in government subsidies aimed at maintaining and improving the water supply.

Thus, many city councils were in need of approximating the price of service to its real value. Otherwise, simply maintaining the service would have made municipal budgets significantly unstable. From that time onwards, local politicians began to reconsider outsourcing the management of water utilities as an attractive option. The privatization of urban water management has often been seen as a low cost option to carry out a direct policy of increases in water rates (Bel & Miralles, 2003).

2) Cost reduction

There has been a steady increase in the salaries of government employees since the late 1960s. This trend can be attributed to the need to attract a more skilled workforce from the private sector, but especially to increased trade union pressure in public employment. This situation, along with the financial difficulties suffered by local governments of the time, required facing a cost reduction, and privatization might be the answer to this problem. Especially since the late 1970s, the first econometric studies were made in the USA, aimed at trying to link the costs of providing the urban water supply and how the service was managed, either by the public or private sector. These studies seemed to offer evidence that outsourcing to private companies was associated to lower costs of service provision (Morgan, 1977; Crain & Zardkoohi, 1978).

The explanation of this fact is provided by the Public Choice Theory. According to this approach, when the production of public services is monopolized by politicians and bureaucrats, the result is an oversupply of public services and, therefore, a clear situation of inefficiency. The solution put forward in this context is to introduce competition into the market of public services through tenders and auctions to award the running of the service. Nevertheless, the question is whether or not outsourcing a local service through public tenders introduces real competition in the sector (Bel & Warner, 2008).

Another way of reducing costs is to exploit the economies of scale in the sector. The optimal scale in the urban water supply oftentimes tends to be higher than in the municipal district. Therefore a more efficient way would be to extend the service to other municipalities in order to aggregate demand and increase the scale of operations. Thus, a useful strategy to achieve this optimal operational scale could be to contract out the service to a private company.

However, when compared to the previous argument, outsourcing services does not seem to be the only possible way of aggregating demand. Inter-municipal cooperation, *e.g.,* through a consortium may achieve the same results. A more efficient scale could be achieved through cooperation among smaller municipalities, even though it is true that inter-municipal cooperation is compatible with both public and private management of a service (Bel & Fageda, 2007).

3) Political Processes and Ideological Attitudes

Local politicians do not make decisions concerning the management of public services based solely on economic grounds. In the analysis of the motivations that underlie

policy decisions in a democratic system, from the *'citizen-candidate'* approach (Osborne & Slivinski, 1996), the importance of two factors is highlighted. Firstly, political interest, understood as the priority of winning the elections and gaining access to or remaining in power. Secondly, politicians will tend to prefer a series of policies over others in accordance with their ideology of society.

If a politician pursues electoral success, the presence of interest groups may be an important factor in the decision-making process. Thus, in those municipalities where the level of trade union membership is high, direct management or outsourcing to a public company will be the most popular choice. In contrast, in those municipalities where there is a well-articulated business network with influential business groups, other privatization options will be more present.

Finally, the ideological orientation of the party that governs the municipality may determine the predominant mode of management. Right-wing political parties are initially expected to promote the outsourcing of water utilities, while left-wing parties would back direct management or delegating management to a public company.

In summary, the revival of entrepreneurship in the water sector since the 1980s put an end to approximately forty years of public management hegemony in the water sector. On the one hand, historical background is essential to understand the change in trend; the economic crisis in the 1970s saw Spain embark on major tax reform aimed at reducing the public deficit and containing inflation and this represents a major obstacle to the subsidy policy for municipal financing. On the other hand, Public Choice Theory, which is very critical of direct management of local services, gained supporters among both scholars and politicians. According to this theory, the privatization of urban water supplies leads to more efficient levels of management.

In empirical research on the issue, different authors have focused on the importance of pragmatic factors in explaining local public decision-making (Bel & Fageda, 2007; 2009). From this perspective, the privatization of service management has traditionally been seen as a way to solve the financial problems of Local Governments. Some of these studies agree that privatization is also linked to a significant reduction in the cost of providing the service and a larger increase in efficiency.

Again, in an unfavourable macroeconomic environment, the privatization of service management is an attractive option. From a political perspective, one of the greatest advantages is the possibility of implementing water tariff reforms and to adjust prices to the real cost of providing the service. In the same line, privatization can also greatly help to adjust the sector, in cases where there the public sector is truly over dominant. Both increasing tariffs and decrease the number of employees are very unpopular policies. The privatization of service management would surely receive less resistance and be less expensive in political terms. It is also very likely that private companies would be more dynamic in terms of organizational management due to having fewer restrictions than public organizations, which may also result in being able to implement new technologies in the sector more easily.

On the contrary, the most important drawback of privatizing water services is once again the difficulty or impossibility of drawing up contracts that cover all possible contingencies and prioritize the criteria of universal access and quality in the provision of the service. Therefore, monitoring and controlling private performance becomes vital, although in those cases where Local Governments were able to do so –which is not often– it would lead to higher administrative and technical costs that would

significantly reduce the level of efficiency of the privatization alternative. Thus, the privatization option should take into account not only the costs of service provision, but also the transaction costs arising from monitoring and control processes.

6. Are we facing a new trend?

Throughout this chapter a cyclical trend in the management of the urban water supply in Spain has been proved, similar to that observed in other countries. Since the modernization of water services began in the mid-19th century, there have been periods in which the weight of private participation and public management of the service have alternated. Even though a significant volume of the Spanish population is supplied water by a private company since the last cycle of privatizations, there are signs that this form of management is no longer expanding.

Firstly, civil society is used to paying political prices, which are usually too low to recover the full cost of service –including amortization of infrastructures–, and also is becoming increasingly reluctant to new announcements of privatization in the industry. Society reject the foreseeable price increases that privatization entails. Secondly, in some cities the expectations for private enterprises have not been met. Since the late 1970s and early 1980s, the main argument in favour of privatization was the potential improvements in technical efficiency and costs associated with private management. However, subsequent research has questioned that belief (González-Gómez & García-Rubio, 2008; Bel & Warner, 2008). In some cases, private companies have not achieved the profits they expected from their business. Some companies made losses in the management of the service in small municipalities as part of an expansion strategy that failed to produce the expected results. In addition, other companies have abandoned a

mature industry to specialize in other emerging areas of activity related to the water cycle, such as purification or desalination.

In this context we wonder whether we are at the beginning of a new phase of the cycle. Therefore, in this possible new phase of the cycle, a break on the privatization trend is noticed. The number of full privatizations appears to be decreasing in recent years. On the other hand, there are cases of reversion reported by other authors in other places of the world. Some city councils are changing their initial decision to privatize and water utilities are now being contracted back to the Public Sector (Hefetz & Warner, 2004, 2007; Warner, 2008; Chen, 2009).

Faced with the option of privatizing, other governance arrangements attractive to Local Governments are also emerging at the beginning of this new phase (González-Gómez et al., 2009):

- Some public companies are showing that it is possible to introduce certain improvements stemming from private management in public companies. Therefore, it is understood that capital concentration in the Public Sector's hands favours the defence of general interests, such as universal access to the urban water supply or sustainable management of water resources. In addition, evidence shows that public initiative may not necessarily be a barrier to achieving the goals of reducing costs and expanding the service area. It is common for public companies to compete with an advantage in the management of the urban water supply in many towns; public companies are non-profit organizations and as such are able to set lower prices than the private sector. Also, the public sector generally faces lower capital costs than the private sector, because the government guarantees the loans to the utilities in the public sector. Nevertheless,

experience shows that small municipalities do not have sufficient capital or human resources to establish public companies.

- The public-private company is acquiring a more prominent role. In this legal form, the capital is shared between a private partner and a public partner, usually the city council. As a result, this company's executive committee is made up of local political representatives and representatives of the private partner. This formula allows leveraging the know-how of the private company in day-to-day running of the service, without losing the more direct control of the social interests of citizens exercised by the public partner. Another advantage of this type of company is that it reduces transaction costs as it decreases the cost of monitoring the performance of private operators. The absence of prior experience with mixed companies could have led municipalities to opt for full privatization of the management of the service in the 1980s and early 1990s. But today mixed companies are becoming increasingly popular. Many of the new assignations of service management use this formula and even municipalities that privatized the management of the service completely are now opting for mixed companies. Some of the Spanish municipalities that in recent years have opted for the mixed company formula include Montilla in 2005, Torrent in 2005, Paterna in 2006, Lucena in 2007, Linares in 2007, Nerja in 2009, Puertollano in 2009, León in 2010 and Priego in 2010. It is possible to cite many instances of good practice in all mixed companies. For example, the Municipal Water Company of Tarragona (EMATSA), owned by the city council of Tarragona (60%) and by the Agbar Group (40%) has made a commitment in recent years to introducing advanced equipment to locate leaks, trenchless pipe replacement, energy optimization in its facilities, geographic information systems to support Integrated Water Cycle Management and, more recently, a data-acquisition system to control water quality. Another significant example is the

Municipal Water Company of Murcia (EMUASA), owned by the city council of Murcia (51%) and AQUAGEST (49%). The policy of this company has led the city of Murcia to become one of the lowest water-consuming Spanish municipalities. It has also pioneered the application of remote systems and remote control of the sewerage system in Spain, along with the rational use and regeneration of resources; in 2007 this mixed company initiated a project for the environmental use of biogas and a year later, received the GreenFleet European Award for its efforts towards reducing emissions of polluting gases. In addition, for its research, it has patented a process called HIDRONITREX® for removing nitrates from water. It is also worth mentioning the case of the Mixed Water Company of Las Palmas (EMALSA) –owned by the city council of Las Palmas de Gran Canaria and the Sacyr-Vallehermoso Group and the Saur Group– which accepted the difficult challenge of supplying a population of over 400,000 inhabitants in the island of Gran Canaria (municipalities of Las Palmas de Gran Canaria and the Villa de Santa Brigida) by means of desalination. Using the technique of reverse osmosis, EMALSA produces 80,000 m^3 of water per day at an efficiency rate of 52.3% in the conversion of seawater into drinking water.

- Another trend observed is the expansion of the service management area. It is increasingly common for a single management unit to provide the service to neighbouring communities. In some cases this is due to the expansion strategy of a public or private company that was already operating in another municipality in the area. There have been many cases of utilities seeking to expand the service area to benefit from the economies of scale the sector offers, although not always to the same extent. For example, Aguas de Huelva (EMAHSA), a public company since 1997, expanded its service area in 2002 to serve the adjacent municipality of Alfaraque. Aguas de Alicante (AMAEM) has integrated the management of three municipalities in the

metropolitan area of Alicante and two others from the region of Vinalopó. In Sevilla, EMASESA, expanded to cover another nine municipalities in the mid-1990s and now supplies eleven municipalities. In Granada, the mixed company EMASAGRA, in addition to serving the city, has extended its water management responsibilities to fourteen municipalities in the metropolitan area of Granada in just over ten years. In Barcelona, the private company Aigües de Barcelona serves 22 municipalities of its conurbation. The Consorcio de Aguas de Bilbao-Vizcaya, which was established in 1967 as a public entity covering 19 municipalities, currently provides water services to 72 municipalities, the highest growth rate recorded during the 1990s, although the incorporation of municipalities has continued this century. Finally, in Madrid, Canal Isabel II is the public company that provides water services to most of the municipalities in the Community of Madrid.

- In other cases, public initiatives –through city councils themselves or higher levels of the public administration– pursue a consortium of municipalities in the same geographic area. This formula is especially recommended for small municipalities. Although some Local Governments may consider it inconvenient to delegate decision-making to a higher public body, this cooperation between municipalities allows them to expand the service area and therefore take advantage of the significant scale economies in the industry (González-Gómez & García-Rubio, 2008). These public-run consortiums compete with private companies in many areas of Spain. After a concession contract with a private company has expired, some Local Authorities prefer to join one of these inter-municipal consortiums instead of renewing the concession contract. For example, Aguas Sierra de Cádiz is the public company that provides water services, since 2004, to the municipalities belonging to the Mancummunity of Municipalities of the Sierra de Cadiz. In 2005, the public company incorporated the municipality of Villmartín and

shortly after did the same with the municipality of Ubrique. Currently, Aguas de Cádiz provides water services in a total of 18 municipalities. Another case involved the municipalities of Fines and Tíjola (Almería), whose water services were managed by GESTAGUA, a private company, until this service was taken up by the public company Gestión de Aguas del Levante Almeriense (GALAS), a company that today provides water services in 27 municipalities. Or the case of the municipality of Montoro (Córdoba), where water management was the responsibility of GESTAGUA, a private company between 1989 and 2004, before the public company Aguas de Córdoba (EMPROACSA) took over; currently, this public company provides water services to 48 municipalities.

- Since the mid-1980s, the Spanish legal system offers a wide range of alternatives for local public service management. Many municipalities found it difficult at the time to manage the urban water supply directly, decided to delegate management to private companies. During these years, essentially pragmatic motivations were behind the outsourcing of water services, including the scarcity of financial resources to cover investments (González-Gómez & Guardiola, 2009; González-Gómez et al., 2010). Over time, the role of the private sector in business organizations has been demystified, while the public sector has developed other forms of management that were already contemplated by Spanish legislation in the 1980s. In this legal framework, mixed companies are a very interesting management tool. As already mentioned, this alternative can take advantage of the know-how of the private company while at the same time the public partner can control public interest more directly. As a result, promoting mixed companies in small municipalities is one way of ensuring a quality water supply to these towns. However, we believe that regional governments should

promote the implementation of more rigorous analyses to define optimal management areas that make more efficient and sustainable use of water resources.

It is undoubtedly still too early to confirm that we are in a new phase of the cycle, but there are already signs that are worth researchers looking into. Not enough time has passed as yet, a more accurate picture of this possible change more likely to be available within a decade, along with more evidence of the factors that are seen as harbingers of change.

8. What can be learnt from the Spanish case?

This section discusses some of the strengths and weaknesses of the Spanish model, from which lessons can be learned for the design of the industry in other institutional environments.

The main strength of the Spanish model is the flexibility allowed by the legislature. As discussed in the fifth section, the organism responsible for the management of water services –the municipality– has a wide variety of possibilities to choose from in terms of the legal form of service management, mainly direct management or delegating this task to either a public company, a private company, or a public-private partnership. This flexibility makes it possible for local governments to choose the form of management they consider most appropriate on the basis of the characteristics of each area of supply, as well as the sociological and political constraints at the time.

In order to illustrate this feature of the Spanish model, Warner & Bel (2008) explain what happens in the five most populous cities in Spain: Madrid, Barcelona, Valencia, Sevilla and Zaragoza. 'Canal de Isabel II' is a public company owned by the

Madrid Regional Government that provides water services to the city of Madrid and another 167 municipalities in the region; In Barcelona, the Agbar Group, a private company, has managed water services since 1882; In Valencia, the responsibility of urban water management falls to EMUVISA, a mixed company; In Sevilla, urban water management is undertaken by EMASESA, a public company subject to private law that provides the service to the municipality of Sevilla and 10 other municipalities; and in Zaragoza, water services are provided directly by the City Council.

However, it is true that, in practice, not all municipalities in Spain have the same options. Private enterprises are guided by criteria of economic efficiency, so a private company can choose not to seek certain public tenders for privatization. Clearly, a private company will not appear when there are doubts regarding the viability of a project, a situation that arises predominantly in small rural municipalities, with a scattered population and few economic resources. It is not uncommon for small municipalities to make calls for privatization proposals that end up not attracting any bidders. The problem is that in Spain more than 60% of the existing 8,114 municipalities have fewer than 1,000 inhabitants, such that, apparently, many municipalities are unattractive to private companies.

This weakness in the Spanish model, which arises as a result of the division of the territory into small administrative units, can be solved legally through inter-municipal cooperation. This is undoubtedly another example of the flexibility of the Spanish model for urban water management. In the complex network that makes up the four levels of the Spanish government, provincial governments often take the initiative to encourage associations between small municipalities for the joint provision of public services, such as the water supply. Once the service area has been created by municipal

associations, sometimes the service is managed directly by the public administration; at other times, the service area will become large enough to appeal to a private company. Sharing fixed costs among a larger number of municipalities reduces the average cost of the service. Therefore, it is not uncommon for provincial governments to promote a public auction to delegate management to a private company.

Another major weakness of the Spanish model is the fragmentation and atomization of jurisdictions in relation to water supplies. The result is a confusing, inadequate and inefficient organizational structure. From the perspective of the Spanish urban water supply, three ministries have more or less direct responsibilities: the Ministry of the Environment and Rural and Marine Affairs; the Ministry of Industry, Tourism and Trade; and the Ministry of Health and Social Policy. The '*Confederaciones Hidrográficas*' and various provincial and autonomous governments also have control. However, the direct responsibility of urban water supply lies with the city councils. This complex and diffused structure makes it difficult to take coordinated decisions and dilutes responsibility across various levels of government. One remaining challenge is the creation of an administrative structure that defines a technical and legal order to clarify the current situation, the Ministry of the Environment and Rural and Marine Affairs probably being the most appropriate institution.

In the authors' opinion, the absence of an organism responsible for auditing and monitoring the situation of urban water supplies, similar to those existing in nearby countries, such as England and Wales –OFWAT–, Netherlands –VEWIN– or Portugal –IRAR– is also a weakness of the Spanish model. This type of body could perform financial analysis of operators in the sector, tariff structure designs, reports on the security of supplies and proposals for mergers or the disintegration of companies,

among other activities; these competences largely fall outside the current jurisdiction of municipalities and that would make the sector more transparent.

Finally, in Spain it is necessary to consolidate a change of approach in water management, beyond the vision focused on supply management that was inherited from the 19th century and based on the boom in hydraulic infrastructure; the number of large dams in Spain (more than 1,200) is the largest in the world per capita. Although in theory this situation is accepted, it is necessary to make a firmer commitment to policy of demand management based on multidisciplinary approaches, in which economic analysis plays a more prominent role. In this sense, water economy, which until a few decades ago was a marginal discipline, must become a key tool in water policy in the 21st century, in order to guarantee the water necessary to meet the demand of all people while also taking into account the survival of aquatic ecosystems; the need to adjust water quality depending on use and the scale of facilities and infrastructure on needs. Furthermore, citizen participation in water policy should be promoted and ensured (Cabrera & Arregui, 2010).

Regarding the possible application of the Spanish experience to other regions of the world, it is worth highlighting the twofold flexibility referred to above that is provided by the legal framework in Spain. As regards the diversity of existing legal forms, the figure of the mixed company could be particularly interesting for developing countries. This legal form may be an ideal framework for public-private participation in the industry. Private companies can bring knowledge and funding alternatives to regions that need major work on water supply systems where the government alone is unable to cope. Additionally, one strength of a mixed company is the possibility of the public sector controlling the activity, thus minimizing transaction costs. In this sense, we

cannot forget that the defence of the 'public value' of water in the rural areas of developing countries should be stronger because, due to the basic nature of the water service, social criteria should prevail over corporate profitability.

Moreover, in reference to the second aspect of flexibility offered by the Spanish model, the formulas for municipal associations that occur in Spain can also serve as a reference for developing countries. There is a certain parallelism between large areas in Spanish rural zones and those in developing countries. These areas are sparsely inhabited and scattered with low relative economic development. In rural areas in Spain, the municipal association processes promoted by the public administration have led to improvements in water services in many small municipalities.

9. Summary and conclusions

This chapter presents, in several stages, the explanatory factors behind the change in management of urban water supplies in Spanish cities since the second half of the 19th century. In all of this time, public and private sector dominance of management has alternated. The observed cyclical pattern is similar to other countries, although the trend in Spain lags behind to a certain extent.

The reasons for this alternation have to put into context in each period of time. Decisions have been adapted to the needs at each time. On the one hand, the private sector has been essential in two different periods: in the second half of the 19th century and, in the second half of the 1980s. Briefly, private companies have the advantage of the know-how acquired in the various cities where they operate. They have also been essential at times when the concentration of large volumes of capital was required in the sector to undertake the necessary investments to create or renew service infrastructure.

But there are also drawbacks associated with the private company. The lack of interest shown in providing the service in less profitable areas of the country (especially in small municipalities); the lack of investment in renovating and maintaining the service, or the problems city councils have to monitor and control private companies.

The Public Sector, on the other hand, has played a more significant role in other periods, also as a result of the contemporary socio-political situation. The main advantage of direct public management is greater control of general interests. In fact, this has been one of the main arguments for the return of public management in the sector. We cannot forget that water, up to a certain level of consumption, is a basic necessity and as such access should be universal. In addition, it is worth highlighting that other aspects of general interest are currently becoming increasingly important, such as the sustainable management of water resources and protecting the environment.

However, following the review undertaken, a couple of clarifications are due. Firstly, it is important to stress that ideological aspects in general have played a secondary role in decision making where the type of management employed is concerned. Pragmatic reasons have mainly been behind the decisions taken regarding the management formula for the urban water supply over time (especially in privatization processes). Secondly, it is also possible that neither of the management forms –purely public or purely private– is clearly better than the other. The survival of both management forms over time and the current coexistence of both forms in Spain constitute strong evidence for this affirmation.

At present, the urban water supply in Spain has to face a major challenge: the necessary renewal of the distribution network. Although universal access to water is a reality, technical infrastructure is highly deficient in many cities. The high volume of

water losses, which on average stands around 25% (National Institute of Statistics-INE, 2009), is indicative of the impoverished state of many network infrastructures. This is a particularly serious situation in a country where the pressure on water resources is very high and can be severely affected by the consequences of climate change. This reality is joined by a lack of financial capacity to meet the necessary investments. The current economic environment is a serious impediment for both the private and public sector, suffering from serious liquidity and solvency problems that hinder investments in all areas, not only in water services.

The flexibility of the Spanish legal system is resulting in policy-makers choosing from different management alternatives, once again guided by eminently pragmatic motivations aimed at providing the best solution for their particular situation. There are recent signs, largely conditioned by the scenario described above, of a change in trend regarding decisions on the management formula for the urban water supply that can be summarized in the search for different forms of cooperation. On the one hand, local governments are increasingly opting for mixed companies. This allows the private sector to enter and make investments, while still allowing local governments to exert more direct control on service management, unlike the case of full privatization. Mixed companies are a good example of the defence that some authors make of the need to go beyond the existing dichotomy in the debate that tends permanently to confront the public and private sectors and propose forms of joint management (Hefetz & Warner, 2007). On the other hand, a trend is emerging, whereby particularly smaller municipalities are searching for new forms of cooperation to jointly manage the urban water supply. This makes it possible to take fuller advantage of the economies of scale in the industry and, ultimately, to reduce the average cost of providing the service.

10. References

AEAS (2006). Encuesta sobre el Suministro de agua potable y saneamiento en España, [Survey on water supply and sanitation in Spain] Madrid (Spain): AEAS.

AFEE (1983–1985) Aguas y Balnearios (Madrid: Anuario Financiero y de Empresas en España (AFEE)).

Antolín, F. (1991). Las empresas de servicios públicos municipales, in: F. Comín & P. Martín-Aceña (Eds) Historia de la empresa pública en España [History of public enterprises in Spain], 283–330 (Madrid: Espasa-Calpe).

Bel, G. & Fageda, X. (2007). Why do local governments privatise public services? A survey of empirical studies, Local Government Studies, 33(4), 517–534.

Bel, G. & Fageda, X. (2008). Reforming the local public sector: economics and politics in privatization of water and solid waste, Journal of Economic Policy Reform, 11(1), 45–65.

Bel, G. & Fageda, X. (2009). Factors explaining local privatization: a meta-regression analysis, Public Choice, 139(1), 105–119.

Bel, G. & Miralles, A. (2003). Factors influencing the privatisation of urban solid waste collection in Spain, Urban Studies, 40(7), 1323–1334.

Bel, G. & Warner, M. (2008). Does privatization of solid waste and water services reduce costs? A review of empirical studies, Resources, Conservation and Recycling, 52(12), 1337–1348.

Biswas, A. K. (2006). Water management for major urban centres, International Journal of Water Resources Development, 22(2), 183–197.

Cabrera, E. & Arregui, F. (2010). Water engineering and management through time. Learning from history, in: E. Cabrera & F. Arregui (Eds) Engineering and Water

Management Over Time. Learning from History, 3–26 (Boca Raton, FL: CRC Press).

Chen, C. A. (2009). Antecedents of contracting-back-in: a view beyond the economic paradigm, Administration Society, 41(1), 101–126.

Comín, F. (1996). Historia de la hacienda pública [History of public finances] (Barcelona: Crítica).

Costa, M. T. (1981). Iniciativas empresariales y capitales extranjeros en el sector servicios de la economía española durante la segunda mitad del siglo XIX [Entrepreneurial initiatives and foreign capitals in the services sector of the Spanish economy during the second half of the 19th century], Investigaciones Económicas, 14, 45–83.

Crain, W. M. & Zardkoohi, A. (1978). A test of the property-rights theory of the firm: water utilities in the United States, Journal of Law and Economics, 21(2), 395–408.

García, C. & Comín, F. (1995). Reforma liberal, centralismo y haciendas municipales en el siglo XIX [Liberal reform, centralism and municipal finances in the 19th century], Hacienda Pública Española, 133, 81–106.

Glick, T. F. (1987). Ciencia, tecnología y medio ambiente urbano: la crisis del saneamiento en el Londres medieval y victoriano [Science, technology and the urban environment: the sanitation crisis in medieval and Victorian London], Ciudad y Territorio, 71, 23–33.

Gómez-Ibáñez, J. A. & Meyer, J. R. (1993). Going Private: The International Experience with Transport Privatization (Washington, DC: Brookings Institution).

Gómez-Ibáñez, J. A. (2003). Regulating Infrastructure: Monopoly, Contracts, and Discretion (Cambridge, MA: Harvard University Press).

González-Gómez, F. & García-Rubio, M. A. (2008). Efficiency in the management of urban water services. What have we learned after four decades of research?, Hacienda Pública Española, 185(2), 39–67.

González-Gómez, F. & Guardiola, J. (2009). A duration model for the estimation of the contracting out of urban water management in southern Spain, Urban Affairs Review, 44(6), 886–906.

González-Gómez, F., Guardiola, J. & Ruiz-Villaverde, A. (2009). Reconsidering privatisation in the governance of water in Spain, Municipal Engineer, 162(3), 159–164.

González-Gómez, F., Picazo-Tadeo, A. J. & Guardiola, J. (Forthcoming, 2010). Why do local governments privatise the provision of water services? Empirical evidence from Spain, Public Administration.

Hefetz, A. & Warner, M. (2004). Privatization and its reverse: explaining the dynamics of the government contracting process, Journal of Public Administration, Research and Theory, 14(2), 171–190.

Hefetz, A. & Warner, M. (2007). Beyond the market versus planning dichotomy: understanding privatisation and its reverse in US cities, Local Government Studies, 33(4), 555–572.

Instituto Nacional de Estadística (INE) (2008). Encuesta sobre el suministro y saneamiento del agua [Survey on water supply and sanitation] (Madrid: INE).

Kraemer, R. A. (2001). Public and private management. Models and trends, in Co-operation Models for Environmental Infrastructure Projects, 7–39 (Brussels: European Commission).

Linatti Bosch, J. A. (1966). Las empresas de abastecimiento de agua en España [The water supply companies in Spain], Revista de Obras Públicas, 114(3017), 651–662.

Matés, J. M. (1997). Las empresas de abastecimiento de agua en España: una aproximación histórico-económica (1840–1970) [The water supply companies in Spain: a historical-economic approach (1840–1970)] (Granada: Universidad de Granada).

Matés, J. M. (1998). Cambio institucional y servicios municipales [Institutional change and municipal services] (Granada: Comares).

Matés, J. M. (1999). La conquista del agua: historia económica del abastecimiento urbano [The conquest of water: economic history of urban water supply] (Jaén: Universidad de Jaén, Servicio de Publicaciones e intercambio científico).

Matés, J. M. (2004). The development of water supplies in Spain. 19th and 20th centuries, in: A. Giuntini,

Miralles, A. (2009). A duration model analysis of privatization of municipal water services, Revista de Economía Aplicada, 17(50), 47–75.

Morgan, D. (1977). Investor owned vs. publicly owned water agencies: an evaluation of the property rights theory of the firm, Journal of the American Water Resources Association, 13(4), 775–781.

Nadal, J. & Carreras, A. (Eds) (1990). Pautas regionales de la industrialización española (siglos XIX y XX) [Regional patterns of Spanish industrialization (19th and 20th centuries)] (Barcelona: Ariel).

North, D. C. (1994). Economic Performance Through Time. The American Economic Review, 84(3), 359-368.

Núñez, G. (1996). Servicios urbanos colectivos en España durante la segunda industrialización: entre la empresa privada y la gestión pública [Collective urban services in Spain during the second industrialization], in: F. Comín & P. Martín Aceña (Eds) La empresa en la historia de España [The company in Spanish history]

Osborne, M. J. & Slivinski, A. (1996). A model of political competition with citizen-candidates, Quarterly Journal of Economics, 111(1), 65–96.

Soler, M. A. (2003). Water privatization in Spain, International Journal of Public Administration, 26(3), 213–246.

Troesken, W. (2006). Water and urban development, Journal of Urban History, 32, 619–630.

Varis, O., Biswas, A. K., Tortajada, C. & Lundqvist, J. (2006). Megacities and water management, International Journal of Water Resources Development, 22(2), 377–394.

Warner, M. E. & Bel, G. (2008). Competition or monopoly? Comparing privatization of local public services in the US and Spain, Public Administration, 86(3), 723–735.

Warner, M. E. (2008). Reversing privatization, rebalancing government reform: markets, deliberation and planning, Policy and Society, 27(2), 163–174.

CHAPTER 2

RECONSIDERING PRIVATISATION IN THE GOVERNANCE OF WATER IN SPAIN

1. Introduction

At the end of the 1970s, English-speaking countries undertook certain market reforms that other western countries followed throughout the 1980s. These reforms affected municipal water services and some nations allowed the private sector to take over their management (OECD, 2003). Sufficient time has passed to allow a balanced overview of how good a decision it was to allow the private sector to enter this industry. There is no clear conclusion suggesting that private ownership is superior to public ownership in urban water service management. The debate remains open and privatisation has its advocates and detractors. Currently, there are two main trends running against water service privatisation. Firstly, there is growing social resistance as a reaction to new industrial privatisation advertisements. Secondly, a re-governance process is occurring in the water industry, which is leading to a return to public management of services that had been previously privatised.

This paper reviews the re-governance phenomenon in Spain. Decisions regarding governance of the Spanish urban water service are taken by the municipal government. Municipalities can run the service themselves or outsource it to a public firm, a private firm or a mixed public-private initiative. This paper focuses on complete privatisation of the urban water service. From the mid-1980s, many Spanish municipalities decided to privatise their water services. According to Spanish law, municipalities can only privatise management of the water service because the infrastructure still belongs to the public administration. The company that holds the concession is responsible for running the service and maintenance of the supply networks for the time agreed in the contract. At the end of the contract, the local government must again decide how the service is to be managed. Within this regulatory framework, after privatisation occurred from the end of the 1980s, two trends have been

observed since the beginning of this century. Firstly, there has been a slowdown in the number of privatisations. Secondly, some municipalities have decided to reverse their decision regarding the complete privatisation of urban water services. Within this context, some new Management styles are acquiring a more important role.

Section 2 of this paper examines the causes of water service privatisation and Section 3 looks into the shortcomings of private management in this sector. The process of reconsidering water privatisation in some Spanish cities is explained in Section 4 and Section 5 presents a summary and conclusions.

2. Explanatory factors in the privatisation of water management

Since the seminal work of Ferris (1986), several studies have analysed the factors that influence local governments' decision to contract out municipal services. Some have studied the reasons for outsourcing several local services (Miranda, 1994; Greene, 1996) while others have analysed the factors that influence the decision to contract out a particular service (Bel & Miralles, 2003; Walls, Macauley & Anderson, 2005).

Although there is a considerable amount of literature concerning governance in the water supply industry, relatively little research has been devoted to analysing the explanatory factors that affect decisions made by local governments regarding management of the service. Some investigations approached this question in a very specific way (Ménard & Saussier, 2000; Bel & Fageda, 2008; Miralles, 2009; González-Gómez & Guardiola, 2009). Others have addressed the issue more indirectly; although the objective of these studies was to analyse factors concerning differences in the price of water, they first incorporated a study of the determinants of the management choice taken by local governments (Carpentier et al, 2006; Martínez-Espiñeira, García-Valiñas & González-Gómez, 2009).

Regarding the reasons behind the decision to privatise, four main causes can be distinguished (Bel & Fageda 2007; 2008):

(a) *The search for efficiency*: inspired since the 1970s by theories of public choice (Niskanen, 1971), and property rights (Alchian & Demsetz, 1973), the need to privatise public services in order to reduce costs has been justified.

(b) *Financial limitations of the municipality*: a lack of financial capacity can be an incentive for privatisation.

(c) *Ideology*: left-wing parties are normally more reluctant to privatise.

(d) *Political motivation*: a local government can make concessions to certain groups in order to stay in power.

Although it is difficult to identify systematic patterns of behaviour in the choice made regarding water service management, these decisions seem to be justified by pragmatic reasons, just as in other activities. According to research, the complexity of the scenario seems to be a determining factor for delegation of the service. In complex scenarios, private company know-how can be a decisive aspect in the decision to delegate the service. Governments are more willing to privatise the service when: the original water supply is of low quality, sophisticated purification systems are needed and, the distribution network is difficult to manage due to a large number of connections or the population is spread over a wider area (i.e. lower network density per user).

Complex seasonal demand and salinity of the water resources available due to the presence of sea water would explain the tendency to privatise water services in tourist towns on the French and Spanish coasts (Carpentier et al, 2006; Martínez-Espiñeira, García-Valiñas & González-Gómez, 2009).

Furthermore, some studies have shown that the probability of privatising water services is greater when the municipality has evident funding problems (Miralles, 2009). Privatisation can be interpreted as a short-term solution to facilitate the pursuit of additional funding in order to undertake the investment necessary to maintain and renovate infrastructure (Soler, 2003; Fitch, 2007). It is common for the company that wins the tender for water management to make a commitment to invest in improving and maintaining water networks. The private sector thus takes the responsibility for services that local government could not maintain with its own financial means. From another point of view, it is debatable whether private companies are willing to undertake this activity in any situation—there is evidence that private companies show a greater willingness to provide a service in municipalities where the expected profit is higher (Martínez-Espiñeira, García-Valiñas & González-Gómez, 2009).

3. Some criticism of private water management

Countries opt for privatisation of water services either by imposing it at a national level as in the UK or by giving the option to local governments as in France and Spain. However, some countries are more unwilling. Due to discontent over private management, the Netherlands and Uruguay recently changed legislation in order to prevent private companies managing the water industry in municipalities. In the Netherlands, current law states that only public organisations can provide drinking water services to consumers. Switzerland has also limited the participation of the private sector as it considers water to be a special natural resource (OECD 2004).

Institutions such as the Public Services International Research Unit are quite critical of private interventionism in urban water services. Essentially, it is considered that the incorporation of private companies into the industry contributes to the existence of an open conflict between public and private interests (Hall & Lobina, 2004; Hall,

Lobina & de la Motte, 2004; 2005). Some of the problems found in the privatisation of water management that could lead to authorities deciding against this option are now reviewed.

3.1. Introducing competition into the industry

The water service industry in cities is a very intensive sector in terms of capital and has high fixed costs. Moreover, it is a sector where the coexistence of a separate water supply network and sanitation service would be inefficient (Knapp, 1978; Hayes, 1987; Bishop, Kay & Mayer, 1994). Consequently, the industry is structured as a natural monopoly.

The problem is how difficult it is to introduce mechanisms that foster competition in the industry. As a consequence, the expected positive effects of privatisation are more difficult to achieve than in other industries. Public administrations try to introduce some competition into the sector with second-order actions establishing competition during the process of awarding licenses and using comparative analysis techniques (benchmarking). However, such second-order solutions also have certain shortfalls in terms of their application and expected effects.

The number of companies that use public tenders is relatively low in countries where this process is commonplace. When there is only one potential service provider or the existing ones reach an agreement prior to the process of awarding a contract, there is a strong probability that the contract will not be granted in the best public interest.

Benchmarking is the alternative option for fostering competition. This technique consists of a comparative analysis of the management systems that operate in the industry. Differentiating between the more and less efficient companies makes it

possible to introduce correction mechanisms that can improve the performance of the least efficient systems. Comparative analysis techniques are applied in EU countries such as England, Wales, the Netherlands and Portugal. The case of England and Wales is paradigmatic as benchmarking is performed by an independent regulatory body (the Office of Water Services (Ofwat)). Based on the efficiency analysis carried out, the limits on prices that water companies can charge customers are fixed every five years. However, benchmarking is subject to some difficulties (Dassler, Parker & Saal, 2006). One of them concerns selection of the methodological approach to be applied (Cubbin, 2005; Balance, 2006) and another is the possibility of horizontal takeovers and mergers that could occur, reducing the number of independent observations that the regulatory institution can include in the comparative analysis.

3.2. Higher prices

Another argument against privatisation is that prices are higher after this process. There have been several very controversial privatisation processes in the field of water management, leading governments to reinstate public management of the service. The cases of Buenos Aires (Casarin, Delfino & Delfino, 2007) and Cochabamba (Nickson & Vargas, 2002; Assies, 2003) represent common examples of privatisation processes that have damaged consumer interests, mainly due to unjustified price increases (Lobina & Hall, 2000; Hall & Lobina, 2004). A direct relationship between higher prices and privatisation of the service has been found in England and Wales (Dore, Kushner & Zumer, 2004), France (Carpentier et al, 2006) and Spain (Martínez-Espiñeira, García-Valiñas & González-Gómez, 2009). However, in those cases this effect was at least partly due to improvements in the quality of the service and the fact that the private companies involved had to perform in a complex scenario.

Nevertheless, unlike public management systems, it is evident that the prime motivation of private companies is to obtain profit. In the absence of any economic profit and financial yield, private initiative makes no sense. It could be argued that if cost efficiency were the same in public and private governance, the desire to obtain profits would provide an incentive for private enterprise to fix higher prices. Only considerable cost efficiency in private governance would allow companies to make profits while fixing lower prices than those of a less efficient public management system.

However, this is an issue in which there are currently no clear conclusions. Since the late 1970s, there have been consistent efforts to show that private water management is more efficient than public management. More than 30 years after initial research into the issue, some recent literature reviews conclude that private ownership cannot be systematically related to more efficient management (Renzetti & Dupont, 2003; González-Gómez & García-Rubio, 2008; Bel & Warner 2008).

3.3. Contracts

Another issue that could deter possible privatisation processes is the costs and problems linked to contracting the service. A factor that should be taken into account by local governments is valuation of the transaction costs associated with privatisation, for example, the costs incurred in the process of writing out a contract, in analysis of the tenders and the process of negotiation and local government supervision of compliance with prior written agreement signed by both parties, all of which should be considered before entering into an agreement. Public administrations must exert control over this activity. If there is no such control, a private company might only focus on profits and neglect the quality of the service and new investment. If the profits obtained by

privatisation were lower than the transaction costs, the suitability of privatising the service should be questioned.

On the other hand, local governments should be very cautious when drawing up contracts in order to avoid mistakes that could cause any harm to consumers. Any oversight or imprecision in summarising the service conditions can lead to a deterioration in quality. This could mean that those aspects related to public interest are relegated to a secondary role.

Finally, the period of application of the contract can also become a problem. If the duration is too long, the contract becomes virtually permanent because the company involved has information advantages when the contract is put to tender again. Moreover, long-term contracts involve the risk of management being less sensitive to changing situations that are not taken into account in the contract. On the other hand, a very short-term contract can provide an obstacle to company investment in infrastructure and technical aspects of the water management system, although it could favour a more competitive attitude (Garcia, Guerin-Schneider & Fauquert, 2005).

3.4. Possible corruption

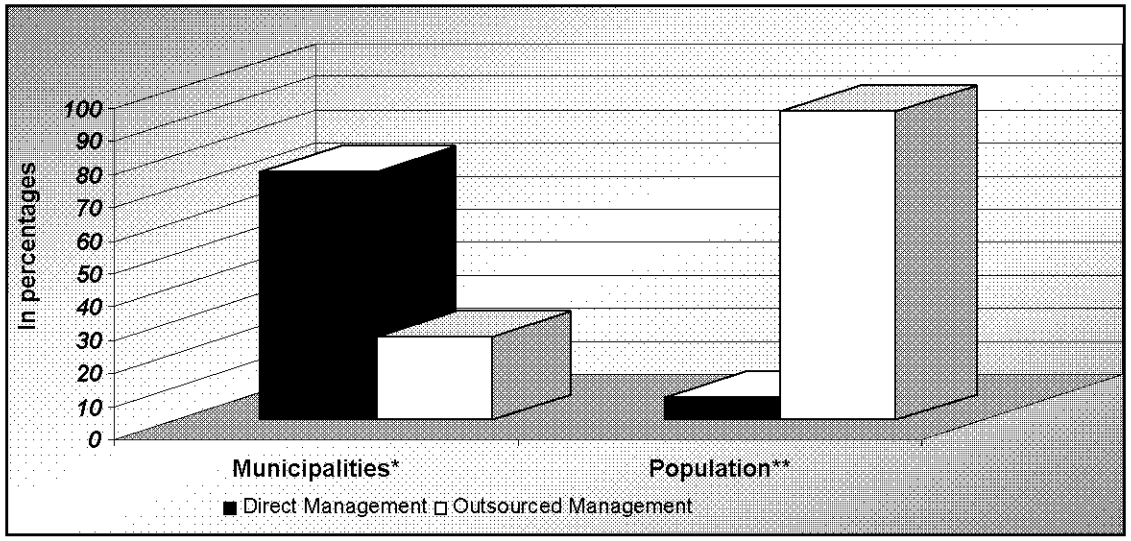
An additional reason not to privatise is the association of this process with possible corruption. For example, a company could pay to be included in a list of suitable contract applicants or to exclude other competitors; payment could be made in exchange for being awarded the contract; and some kind of payment could help to obtain subsidies or certain leniency in application of the law. Pressure from interest groups has been found to be a significant issue in some studies that aim to explain the delegation of municipal services (Greene, 1996; Warner & Hebdon, 2001).

4. Reconsidering water privatisation in Spanish cities

Spain was one of the countries that promoted the possibility of privatising urban water management in the 1980s. Law 7/1985 of 2 April, regulating local government, allowed the private sector to enter the industry. This law determines that water supply is a municipal responsibility and establishes that local government can choose between several types of water management: direct management or outsourced management to a public, private or mixed company. The first option is when a public bureaucracy or public unit produces the services in house. The second option implies the creation of publicly owned firms that are managed autonomously. Although local government has the final control, public firms are managed under private commercial laws. The third option is for a privately owned firm to produce the service. Finally, in the case of a mixed public–private company, corporate capital is split between public and private ownership.

According to a survey carried out by the Ministry of Public Administration with data from 2005 and including 98% of Spanish municipalities, around 75% of Spanish municipalities manage the service directly and 25% delegate governance. However, outsourced management is far more significant than these figures suggest. Outsourced management serves more of the population because the probability of delegating urban water service governance is greater in the most populated municipalities (Miralles, 2009; González-Gómez & Guardiola, 2009). According to data from a survey carried out by the Spanish Association of Water Supply and Sanitation (AEAS, 2006) that included 59% of the Spanish population, in 2004 only 7% of the Spanish population received water from a service directly managed by their local government (Figure 2.1).

Figure 2.1 Governance of the water service in Spain, Direct management and outsourced management distinguishing between municipalities and the population served.



Source: * Ministry of Public Administration: Data from 2005. **AEAS (2006): Data from 2004. Own elaboration.

Many local governments opted for private management of the service in the 1990s. In some cases the service was privatised completely, while partial privatisation was less frequently chosen (mixed public–private company). In terms of population served, in 2004, public companies managed the service for 40% of the population, private companies for 36% and public– private companies for 16% (AEAS 2006; figure 1.1 (Chapter 1)).

There has, however, been a change in the significance of private companies' share of the Spanish water industry. There are no data to confirm this, but there is evidence that local governments are not opting for complete privatisation to the same extent as they did in the 1990s. From knowledge obtained about the sector from interviews with unit managers, questionnaires implemented in different research projects and documentation from the database Hispagua (*Sistema Español de Información sobre el Agua*–, developed by the *Ministerio de Medio Ambiente, Medio*

Rural y Marino), local governments appear to be reconsidering or even reversing complete privatisation of the water service. The explanation for this is twofold.

Firstly, there has been an increase in social opposition to privatisation processes. The most recent cases occurred at the beginning of 2009 in Cuenca, León and Bollullos Par del Condado. Several lobbies have gathered signatures against the announced privatisation of the water service in these municipalities. Secondly, there are other options available to local governments that are no less efficient than those offered by private companies.

(a) Private companies can be reconverted into publicly owned enterprises. Once the service is outsourced, it is uncommon for governance to return to the city council and, if this occurs, it is only for a short period of time. This was the case in Torredelcampo, where, after ending the contract with a private company at the beginning of 2004, the service was directly managed for approximately a year until 2005 when a municipal water company started to manage the service.

(b) In other cases the capital of the firm changes composition from private to a mixed public-private consortium. This formula allows municipalities to benefit from the know-how of the private company, while maintaining more direct control, which is in the interest of citizens. An additional advantage of this kind of company is that it permits a reduction in transaction costs because the costs of supervising the private sector are reduced. The transition from private to mixed public–private companies has recently taken effect in the municipalities of Níjar, Guadix, Torredonjimeno, Linares and Albacete. There have also been transformations from public to mixed companies in cities such as Granada and, very recently, there have been announcements regarding the conversion of the Canal Isabel II water system in Madrid from a public to a mixed company. This company supplies water to almost six million people and the entry of a private partner is justified in order to obtain funding and avoid debt. This privatisation announcement, however, also faces strong political and social opposition.

(c) Another option consists of integrating a legal type of consortium. Several municipalities in an area may develop some sort of associationism as a better alternative for the duration of the contract. Water service to several municipalities can be supplied under one management unit or under several municipalities, either by self-management or by a public or private organisation. It is then possible to benefit from economies of scale and therefore be more cost efficient. It is more efficient if there is just one purification plant to treat water for various municipalities, rather than each town having its own plant. For instance, some municipalities in the province of Almeria joined a consortium (called Gestión de Aguas del Levante Almeriense) when their contracts with private companies ended or were cancelled. This consortium started in 1993 with the support of the provincial government; its corporate capital is shared by 23 different municipalities (table 2.1).

Table 2.1 Examples of water service consortia in Spain

Association	*Number of municipalities served*
Consorcio de Aguas de Bilbao	65
Mancomunidad de la Comarca de Pamplona	50
Empresa Provincial de Aguas de Córdoba	45
Gestión Integral de Aguas de Huelva	38

Source: Own elaboration

There are several factors than can assist in explaining re-governance. In some cases, after a contract expires, the local government decides not to renew its relationship with the service provider. It is also possible that after some years, at the end of the contractual period, there are no reasons to justify privatisation (Hefetz & Warner, 2004). For instance, the probability of privatisation would drop if at the end of the contract a left-wing party were in power. Furthermore, the financial situation of the municipality may have improved or a purification plant may have been built or a problem solved, implying that the technical know-how of the private company is no longer of any real

use. Municipalities Abadiño, Mondragón and Haro were all managed publicly at the end of the contract period with private suppliers. In Spain it is now frequent for small municipalities (with insufficient capacity) to independently develop a quality service and become integrated in consortia promoted by the public administration when they end their contracts with private companies.

In other circumstances, the departure of the private sector can be abrupt. This may happen if a breach of contract is suspected and in such cases local governments may even go to court to force private companies to hand over the service. Discrepancies in interpretation of the agreement or financial difficulties on behalf of the private company can result in breach of contract. For instance, in Alhaurín de la Torre, after a series of incidents and mutual accusations, in 2004 the local government decided to seize the bank accounts of the private water managers, claiming that the company was charging consumers for their water bill in advance. A public company was created in 2005 to manage the water service.

The reversal process may also be due to decisions made by private companies. For example, companies operating in several different sectors may decide to close their water supply business (the Ferrovial Group sold the corporate capital of Helguina, its subsidiary devoted to municipal water supply, to the Aguas de Barcelona Group). Another aspect of the Spanish municipal urban water supply industry is that the private sector is represented by very few companies. In Spain, the private groups with the largest share of the industry are Aguas de Barcelona and Fomento de Construcciones y Contratas, who account for three quarters of the contracts (Warner & Bel, 2008).

It is also possible that a company may decide that it is no longer worth providing service in certain municipalities, for example if profits do not match expectations or when the conditions set to carry out an expansion plan are not achieved. A company can

incur losses for a certain amount of time in a municipality if it has the potential to expand later and incorporate other municipalities from the surrounding area. Indeed, evidence indicates that there is more chance of new privatisation processes in areas where there has been no previous experience of privatisation (Bel & Miralles, 2003; Miralles, 2009). This expansionist policy on behalf of private firms can be stopped by public management. In more sparsely populated regions and areas where towns are separated by greater distances, public administrations can promote associationism to create economies of scale and improve service quality; some examples of this phenomenon are given in Table 2.1. In other cases, public initiative implements expansion strategies similar to those of a private company, as was the case with Empresa Metropolitana de Abastecimiento y Saneamiento de Aguas de Sevilla in Seville, which supplies water to a million people, and Canal de Isabel II, which started in the city of Madrid in 1851 and now supplies water to around 170 municipalities and six million people.

5. Concluding remarks

Market reforms that started in English-speaking countries in the 1970s spread to other developed nations during the 1980s. Since then, legislation in certain countries has allowed the possibility of privatising water services. Although public choice and property rights theories recommend the privatisation of services in order to reduce costs, there are currently some doubts as to the suitability of privatising urban water services. These doubts have been raised due to issues such as the difficulty of introducing competition into an industry that is structured around a local monopoly, higher prices, significant transaction costs and the possibility of corruption.

Spain opened the door to privatisation by reforming legislation concerning water services. Many local governments opted for complete privatisation of their water service

governance from the second half of the 1980s and during the 1990s. Although at present completely private management systems supply water to around 36% of the population, some signs of a slowdown in expansion of this governance model can be perceived. Since the beginning of this century, Spain has witnessed a process of regovernance in which some privatisation decisions are being at least partially reversed. In some cities, private companies have not lived up to performance expectations, while in other cases private companies have not obtained the expected profits from their activity. In this context of questioning private participation in the industry, two alternatives are steadily acquiring greater importance in Spanish cities—mixed public–private companies and associationism.

In summary, the following conclusions may be drawn.

(a) Private companies have not emerged as necessarily more efficient than public companies, at least not in Spain.

(b) Local government decisions regarding the type of Management model adopted are complex and many factors must be taken into account. Proof of this is that not every local government chooses the same kind of management. Additionally, any option chosen is not final but is subject to reconsideration and changes over time.

(c) The development and acceptance of alternative styles of management makes Spain an interesting sample for performance analysis.

(d) The slowdown in expansion of the private sector in water service management could lead to a sudden reallocation of resources to new lines of activity in which innovation and technology are an important added value, for example wastewater treatment and water desalination.

6. References

AEAS (2006). Encuesta sobre el Suministro de agua potable y saneamiento en España, [Survey on water supply and sanitation in Spain] Madrid (Spain): AEAS.

Alchian, A.A. & Demsetz, H. (1973). The property right paradigm. Journal of Economic History, 33(1), 16-27.

Assies, W. (2003). David versus Goliat in Cochabamba: Water rights, Neoliberalism, and the revival of social protest in Bolivia. Latin American Perspectives, 30(3), 14-36.

Ballance, A. (2006). The regulation of capex in water. Utilities Policy, 14(4), 234-239.

Bel, G. & Warner, M.E. (2008). Does privatization of solid waste and water services reduce costs? A review of empirical studies. Resources, Conservation & Recycling, 52(12), 1337-1348.

Bel, G., & Fageda, X. (2007). Why do local governments privatize public services? A survey of empirical studies. Local Government Studies, 33, (4), 517-534.

Bel, G., & Fageda, X. (2008). Reforming the local public sector: economics and politics in privatization of water and solid waste. Journal of Economic Policy Reform, 11(1), 45-65.

Bel, G., & Miralles, A. (2003). Factors influencing privatization of urban solid waste collection in Spain. Urban Studies. 40(7), 1323-1334.

Bishop, M., Kay, J. & Mayer, C. (1994). Privatization and Economic Performance, Nueva York: Oxford University Press.

Carpentier, A., Nauges, C., Reynaud, A. & Thomas, A. (2006). Effets de la délégation sur le prix de l'eau potable en France: Une analyse à partir de la littérature sur les effets de traitement. Economie et Prévision, 174(3), 1-20.

Casarin, A.A., Delfino, J.A. & Delfino, M.E. (2007). Failures in water reform: Lessons from the Buenos Aires's concession, Utilities Policy, 15(4), 234-247.

Cubbin, J. (2005). Efficiency in the water industry, Utilities Policy, 13(4), 289-293.

Dassler, T., Parker, D. & Saal, D.S. (2006). Methods and trends of performance benchmarking in UK utility regulation. Utilities Policy,14(3), 166-174.

Dore, M.H.I., Kushner, J. & Zumer, K. (2004). Privatization of water in the UK and France: what can we learn? Utilities Policy, 12(1), 41-50.

Ferris, J. (1986). The decision to contract out: an empirical analysis. Urban Affairs Quarterly, 22(2), 289-311.

Fitch, K. (2007). Water privatization in France and Germany: The importance of local interest groups. Local Government Studies, 33(4), 589-605.

Garcia, S., Guerin-Schneider, L. & Fauquert, G. (2005). Analysis of water price determinants in France: Cost recovery, competition for the market and operator's strategy, Water Supply, 5, (6), 173-181.

González-Gómez, F. & Guardiola, J. (2009). A Duration Model for the Estimation of the Contracting Out of Urban Water Management in Southern Spain. Urban Affairs Review, 44(6), 886-906.

González-Gómez, F., & García-Rubio, M.A. (2008). Efficiency in the management of urban water services. What have we learned after four decades of research? Hacienda Pública Española, 185(2), 39-67.

Greene, J. (1996). Cities and privatization: examining the effects of fiscal stress, location, and wealth in medium-sized cities. Polity Studies Journal, 24(1), 135-144.

Hall, D. & Lobina, E. (2004). Private and Public interests in water and energy. Natural Resources Forum, 28(4), 268-277.

Hall, D., Lobina, E. & de la Motte, R. (2004). Making water privatisation illegal: new laws in Netherlands and Uruguay, Public Services International Research Unit (PSIRU), London: University of Greenwich.

Hall, D., Lobina, E. & de la Motte, R. (2005). Public resistance to privatisation in water and energy. Development in Practice, 15(3/4), 286-301.

Hayes, K. (1987). Cost structure of the water utility industry. Applied Economics, 19(3), 417-425.

Hefetz, A. & Warner, M.E. (2004). Privatization and its reverse: explaining the dynamics of the government contracting process, Journal of Public Administration Research and Theory, 14(2), 171–190.

Knapp, M.R.J. (1978). Economies of scale in sewage purification and disposal. Journal of Industrial Economics, 27(2), 163-183.

Lobina, E. & Hall, D. (2000). Public sector alternatives to water supply and sewerage privatization: case studies, Water Resources Development, 16(1), 35-55.

Martínez-Espiñeira, R., García-Valiñas, M.A. & González-Gómez, F. (2009). Does Private Management of Water Supply Services Really Increase Prices? An Empirical Analysis. Urban Studies, 46(4), 923-945.

Ménard, C. & Saussier, S. (2000). Contractual choice and performance: the case of water supply in France. Revue d'Économie Industrielle, 92(2/3), 385-404.

Ministerio de Administraciones Públicas [Ministry of Public Administration] (2005). Encuesta de infraestructuras y equipamientos locales. [Infrastructures and Local Equipments Survey] Madrid: Spain.

Miralles, A. (2009). A duration model analysis of privatization of municipal of water services. Revista de Economía Aplicada, 17(2), 47-75.

Miranda, R. (1994). Explaining the privatization decision among local governments in the United States. Research in Urban Policy, 5, 231-274.

Nickson, A. & Vargas, C. (2002). The limitations of water regulation: the failure of Cochabamba concession in Bolivia, Bulletin of Latin American Research, 21(1), 99-120.

Niskanen, W. (1971). Bureaucracy and representative government. Chicago, IL: Aldine.

OECD (2003). Improving water management. Paris: OECD.

OECD (2004). Competition and regulation in the water sector. Directorate for Financial, Fiscal and Enterprise Affairs Competition Committee. DAFFE/COMP(2004)20, Paris: OECD.

Renzetti, S. & Dupont, D. (2003). Ownership and performance of water utilities. Greener Management International, 42(6), 9-19.

Soler, M.A. (2003). Water Privatization in Spain. International Journal of Public Administration, 26(3), 213-246.

Walls, M., Macauley, M. & Anderson, S. (2005). Private markets, contracts, and government provision. What explains the organization of local waste and recycling markets? Urban Affairs Review, 40(5), 590-613.

Warner, M.E. & Bel, G. (2008). Competition or monopoly? Comparing privatization of local public services in the US and Spain, Public Administration, 86(3), 723-735.

Warner, M.E., & Hebdon, R. (2001). Local government restructuring: privatization and its alternatives. Journal of Policy Analysis and Management, 20(2), 315–336.

CHAPTER 3

DO IDEOLOGICAL AND POLITICAL MOTIVES REALLY MATTER IN THE PUBLIC CHOICE OF LOCAL SERVICES MANAGEMENT? EVIDENCE FROM URBAN WATER SERVICES IN SOUTHERN SPAIN

1. Introduction

Over the last quarter of a century, most industrialized countries, albeit to a different extent, have made changes to their legislation aimed at stimulating the contracting out of municipal services. In general, local governments have been given the power to choose who manages municipal services. As a result, some municipalities decided to contract out, while in others these services are still provided by the city council itself. At the same time, researchers have become increasingly interested in ascertaining the reasons behind the difference in behavior of local politicians regarding their decision-making for procuring municipal services.

Following the pioneering research of Ferris (1986), which analyzed the causes behind cities in the United States contracting out municipal services, numerous papers have studied the determinants of local government decisions regarding the management of municipal services. In general, applied research highlights that these decisions are mainly pragmatic (Bel & Fageda 2007, 2009 review the literature), the need to reduce cost inefficiencies and city councils' lack of financial capacity being two of the main reasons found. Moreover, the minimal importance given by the literature to variables representing ideological preferences and political motives when explaining the choice of management for municipal services stands out. On the one hand, researchers have placed more emphasis on analyzing other types of determinants, such as those of an economic nature. For this reason, studies frequently omit variables representing ideology, political motives being only partially considered. On the other hand, the variables representing ideology are not normally significant when explaining local government decisions.

The choice of policy, behavior of politicians and their motives are issues that have been widely studied in the field of *Public Choice*. This approach undertakes an economic analysis of political behavior by considering the political system as a market in which the players, politicians and public employees, interact in pursuit of their own personal interests (Buchanan and Tullock 1962).

The models based on the citizen-candidate approach, developed by Osborne & Slivinski (1996), Besley & Coate (1997) and Dixit & Londregan (1998), represent a significant advance in the analysis of Public Choice. This view goes beyond the Downsian approach to political behavior, strictly opportunistic and selfish (Downs, 1957 and Lindbeck & Weibull, 1987), recognizing that political motives in a democracy revolve around two interests. On the one hand, as in utilitarianism, politicians aim to win the elections to occupy a government post or maintain one. On the other hand, motives stem from politicians preferring to apply certain policies ahead of others.

Such political interests undoubtedly play an important role in local government decisions regarding the Management of municipal services. However, ideological and political motivations could be expected to have a greater influence on the supply of public services, such as water. There are several reasons for this. Although management may be delegated, in most developed countries the provision of urban water services is the responsibility of the public sector because of the positive externalities they generate. Moreover, water is a special consumer good to which universal access must be guaranteed, be affordable for any given level of income and must reach households in conditions that comply with certain standards of quality. Finally, the water industry is made up of local monopolies, which means that the service is often subject to regulation and political control.

This research analyses the determinants of local governments' choice of management system for the urban water supply, paying special attention to the ideological and political factor in said decisions. The study is undertaken using data from the period 1986-2006 for 734 municipalities in Andalusia, a Spanish region located in the south of the Iberian Peninsula. Our contribution to the literature in this field of research is two-fold. In the first place, in contrast to other studies which do not incorporate, or only incorporate partially, ideological and political motivations, we include a wide range of variables representing such factors when explaining decision making regarding the management of water services. As far as we are aware, some of these variables had not been used previously in the literature on this field of research. Secondly, the value of the explanatory variables is taken at the time the local government makes the decision on the management of the water service, instead of at a later date as is normally the case in most of previous research. In this way, we expect to improve the explanatory power of our model.

The rest of the article is organized as follows. Section 2 provides a review of the literature. Section 3 outlines the legal framework that regulates the management of the urban water service in Spain and describes the data and variables. Section 4 develops the main insights of the methodology. Results are presented in Section 5. A final section summarizes and concludes.

2. Review of the Literature

This section reviews the research that has included variables representing ideology and political behavior in the analysis of local government decision making regarding the type of management chosen to run municipal services in general, and local water services in particular (Table 3.1).

Table 3.1 Methodological characteristics of revised studies

Study	*Country*	*Year data*	*Service*	*Num. Municipalities*	*Method*
Ferris (1986)	USA	1982	43 services	447	OLS
Feldman (1986)	USA	1980	Urban buses	67	Probit
Mcguire et al. (1987)	USA	1979-80	School bus	51	Logit
Morgan et al. (1988)	USA	1982	56 services	447	OLS
Ferris & Grady (1988)	USA	1982	Several services	178-995	Logit
Dubin & Navarro (1988)	USA	1974-75	Solid waste	204	Logit
Stein (1990)	USA	1982	64 services	1433	Logit
Morgan & Hirlinger (1991)	USA	1983	4 services areas	615	OLS
Benton & Menzel (1992)	USA	1988-89	76 services	57	OLS
Miranda (1994)	USA	1982	64 services	263	OLS
Chandler & Feuille (1994)	USA	1973-88	Sanitation	740	Logit
Ferris & Grady (1994)	USA	1982	Local health Services	471	Logit
Hirsch (1995)	USA	1980	Solid waste	93	OLS
Greene (1996)	USA	1988	70 services	188	OLS
Nelson (1997)	USA	1992	63 services	1221	Logit
López de Silanes et al. (1997)	USA	1987	12 services	3042	Probit
Kodrzycki (1998)	USA	1992	Several services	644	Logit
Ménard & Suassier (2000)	France	1993-95	Water	2019	Logit
Warner & Hebdon (2001)	USA	1997	8 service areas	201	Logit
Warner & Hefetz (2002)	USA	1992-97	64 services (7 service areas)	1025	Probit
Bel & Miralles (2003)	Spain	1979-98	Solid waste	41-90	Probit
Dijkgraaf et al. (2003)	Netherlands	1998	Solid waste	540	Logit
Ohlsson (2003)	Sweden	1989	Several services	115	Probit
Christoffersen & Paldam (2003).	Denmark	1997	12 services	272	Logit
Martínez Rodríguez (2004)	Spain	2000	Several services	576	Logit
Hefetz & Warner (2004)	USA	1992-1997	64 services and 6 alternatives[13]	628	Probit
Joassart-Marcelli & Musso (2005)	USA (California)	1982-1997	11 services	153-170	Logit
Walls et al. (2005)	USA	2001	Solid waste	980-912	Logit
Hefetz & Warner (2007)	USA	1992-2002	64 services (7 service areas)	628-460[14]	Probit
Marvel & Marvel (2007)	USA	1997-2002	Several services	137	Probit
Tavares & Camöes (2007)	Portugal	1999-2002	Several services	278	Probit
Brown et al. (2008)	USA	1997	Several services	625	Logit
Hebdon & Jalette (2008)	USA-Can	2004	Several services	1493	OLS
Bel & Fageda (2008)	Spain	2003	Solid waste, water	115-456	Logit
Lamothe et al. (2008)	USA	2002	67 services	335	Logit
Miralles (2009)	Spain	1980-1996	Water	133	Duration

[13] The ICMA (International City County Management Association) data cover 64 public services and six alternative service delivery approaches: contracting to for-profit firms, nonprofit firms, or to another government or public authority; selling franchises, using volunteers, and providing subsidies for the service.

[14] To track changes over time, this study paired the surveys into two sets: 628 governments responded to the first two surveys (1992 and 1997), and 460 responded to the latest two (1997 and 2002).

Table 3.1 (Continued)

Study	*Country*	*Year data*	*Service*	*Num. Municipalities*	*Method*
Zullo (2009)	USA	2002	Several services	1530-2183	Logit
González-Gómez & Guardiola (2009)	Spain	1985-2006	Water	744	Duration
Bel, Fageda y Mur (2009-2010)	Spain	1979-2003	Solid waste, water	70-74	Logit
Bhatti et al (2009)	Denmark	2002-2006	All services	271	OLS
Hollian (2009)	USA	1990-2000	Emergency medical services	200	Probit
Bel & Fageda (2010)	Spain	2003	Solid waste, water	539-546	Logit
Guardiola et al (2010)	Spain	1986-2006	Water		Probit
González-Gómez et al (2010)	Spain	1985-2006	Water	741	Probit
Bel & Fageda (2010)	Spain	2003	Solid waste, water	539-546	Logit and Log-log
Levin & Tadelis (2010)	USA	1997	30 services	914	Logit

Source: Expanded from Bel and Fageda (2009).

2.1. General Review

In recent reviews of the literature, Bel & Fageda (2007, 2009) state that local government decisions regarding the management of municipal services are essentially guided by four main types of motivations: economic efficiency, municipality financial problems, political motives and ideological factors. Although the literature has placed more emphasis on analyzing economic and financial causes, as mentioned previously, research has also been carried out on the two motives that, according to the citizen-candidate approach, guide politicians' decision making, namely, their interest in staying in office and ideological preferences.

Initially, it would be sensible to expect right-wing governments to be more in favor of privatization, whereas left-wing governments are reluctant to privatize, the latter arguing they are defending jobs and working conditions or guaranteeing universal and quality services. However, empirical research carried out on municipal services does not appear to support this relationship. When reviewing the literature, we only

found some evidence of a relationship between ideology and the management of municipal services, albeit not overly robust, in Dubin & Navarro (1988), Dijkgraaf et al. (2003) and Walls et al. (2005). In contrast, several papers conclude that the relationship is not statistically significant, including Mcguire et al. (1987), López-de-Silanes et al. (1997), Warner & Hebdon (2001), Bel & Miralles (2003), Ohlsson (2003), Fernández et al. (2008) and Zullo (2009).

On analyzing the relationship between ideology and the choice of who manages municipal services, some studies have taken into account the level of citizen-voter support for the Mayor (Warner & Hebdon 2001; Bel & Fageda 2008). The party in power in the local government is freer to take decisions when holding an absolute majority than if it depends on the support of other parties in the opposition to pass its proposals. As regards political behavior, researchers have also analyzed the influence of the local government stability. According to Miranda (1994), the Mayors who remain in office for the longest tend to be more conservator in decision making. In contrast, Warner and Hebdon (2001) state that local politicians with more years of experience have a greater tendency towards restructuring the provision of municipal services, processes that can include manager changes.

Furthermore, the pressure exerted on local government decision making by groups of stakeholders has also been analyzed. A large number of public employees or a high level of trade union membership can entail clear resistance to privatization processes (Miranda 1994; Dijkgraaf et al. 2003). Christoffersen & Paldam (2003) provide an explanation for this relationship arguing that public employees make up, together with welfare recipients, a public paid group that can be seen as a *welfare coalition* interested in hampering the entry of market forces in the provision of local services, as these forces are considered a threat to *their system*. In a similar line, Hagen

et al. (1999) affirm that privatization looks like a battle between the political leadership and the trade unions, and the stronger the national trade union is locally, the less likely is privatization.

Moreover, the literature has associated high levels of income per capita to a greater likelihood of privatization (Warner & Hebdon 2001; Warner & Hefetz 2002). In reference to the reasons behind this relationship, on the one hand, the people in areas that are more economically developed may prefer municipal services to be delegated to an external company (Boyne 1998). In addition, and on the other hand, private companies are more interested in establishing themselves in municipalities where they expect to earn greater profits from providing the service (Ménard & Saussier 2000). As a result, the governments in cities where expected profits are higher will probably be under greater pressure to privatize local services.

2.2. Review for the Water Supply Service

After reviewing the literature, we found it striking that ideological factors and political behavior had received so little attention as explanatory variables of local government decisions regarding the management of the urban water service. Furthermore, in keeping with most of the research carried out for other municipal services, the results of the few studies of the urban water service support the thesis that pragmatic reasons are more decisive than ideological and political motives.

The main reference for the relationship between ideological and political motivations and the decision regarding who manages the urban water service is the series of papers written by Germà Bel and collaborators. Bel & Fageda (2008) analyses the management choice for the rubbish collection and water supply services, including

the degree of industrial activity as a variable capable to capture the influence of lobbies. In addition, they incorporate a variable denoting the political party that the Mayor belongs to, another of the percentage of votes won by conservative parties in the national elections and a series of variables that combine the two foregoing variables. The conclusion is that the influence of political interests is more relevant than ideology when explaining privatization decisions.

Bel et al. (2010) explores the causes behind the privatization of rubbish collection and water services in small towns. The results show that ideology, measured through a variable that distinguishes whether a Mayor is left or right-wing, is not relevant, while others causes such as the financial situation of the town are. Likewise, Bel & Fageda (2010) concludes that ideological and political factors do not play an important role in local government decisions to share the management of the municipal delivery service with private firms.

Other recent papers have also studied the relationship between public Choice concerning water service management and ideology and political factors. Martínez-Espiñeira et al. (2009) concludes that when towns are governed by left-wing Mayors, the water service is less likely to be contracted out to private firms. Conversely, Miralles (2009) finds that ideology is minimally significant when explaining privatization trends in municipal water services. However, the proximity effect, financial stress and the pressure exerted by lobbies are found to influence the decision to privatize, although the statistical significance of these variables might change over time.

González-Gómez and Guardiola (2009) distinguish between towns governed by right-wing and left-wing political parties and conclude that ideology is not a decisive factor in the decisions taken by local governments to contract out water services.

Finally, in the research by Tavares and Camóes (2007), the variable representing the ideology of the party in power in the local government was not statistically significant in the choice of manager in the areas of environment, water supply or rubbish collection. The variable that represents the interests of lobbies, made up of public employees in the town, was not representative either.

3. Data and variables

Our dataset has been collected from 734 municipalities located in the Southern Spanish region of Andalusia over the period from 1986 to 2006. Spanish legislation stipulates that local governments are responsible for guaranteeing the urban water service, but are empowered to choose how it should be managed and the legal format for the provision of the service. Several possibilities are contemplated. On the one hand, city or town councils may choose between managing the service themselves and contracting out. In the latter case, management can be transferred to a public firm, a private firm or a public-private partnership.

At the end of the period studied, 59% of the municipalities in our sample provided urban water service themselves, while the remaining 41% had contracted out, either to a public firm (35.5%), a private firm (31.2%) or a public-private partnership (33.3%). It is worth highlighting here that public-private partnerships are considered to be private firms for all practical purposes, due to business decisions always being taken by the private partner.

The question worth asking in view of these figures is *what factors influence local governments' decisions regarding the management of urban water services?* Although many studies have dealt with this issue, ideological factors and political

behavior have received little attention. Variables representing ideology frequently are omitted, while political motives are only considered partially. Furthermore, when ideology is accounted for, normally through a variable that distinguishes between left and right-wing parties in power, it is found not to be significant when explaining decision-making (Bel et al. 2010; Bel and Fageda 2010; González-Gómez and Guardiola 2009; Tavares and Camóes 2007). In this paper, we contribute a detailed set of ideological and political variables capable of influencing decision-making, which go far beyond merely distinguishing between left and right-wing political parties.

In the case of ideology, we firstly consider a series of variables representing the ideology of the Mayor. In the period under analysis, we find as many as four either national or regional political parties in local governments in Andalusia, as well as some small independent parties.[15] The two parties that enjoy most support at the national and regional levels and which are striving to dominate the centre of the Spanish political spectrum are the centre/left-wing *Partido Socialista Obrero Español* (PSOE) and the centre/right-wing *Partido Popular* (PP). *Izquierda Unida* (IU) is situated further to the left of PSOE on the political spectrum. There is also a regional progressive party called *Partido Andalucista* (PA), which defends the interests of the region in the national parliament, but whose platforms are sometimes eclectic.

Furthermore, we differentiate between governments with majority and minority rule. Decision-making is easier for a majority government because the Mayor does not need to seek support from other political parties to pass measures and, moreover, he or she is more strongly supported by citizens-voters. The variables included to represent majority governments are *PP MAJORITY*, *PSOE MAJORITY*, *IU MAJORITY* and *PA MAJORITY*,

[15] These parties normally act on a local scale and are not included in our empirical model to avoid problems of multicollinearity.

while the variables representing minority governments are *PP MINORITY*, *PSOE MINORITY*, *IU MINORITY* and *PA MINORITY*.

Regarding political factors, politicians' behavior can also be influenced by their interest in remaining in their posts, which will make them more vulnerable to the pressure of lobbies. The variables *INCOME PER CAPITA* and *PUBLIC EMPLOYMENT* represent this pressure. Moreover, information representing political initiatives aimed at encouraging associationism among municipalities has also been accounted for. Regional government acknowledgement of the existence of urban agglomerations, captured by the variable *URBAN AGGLOMERATION*, and the creation of consortiums, variable *CONSORTIUM*, facilitate the joint provision of services under one sole manager for a group of municipalities. Furthermore, the variable *GOVERNMENT SWITCH*, which captures whether a Mayor is enjoying a second term in office or whether he or she has won election for the first time, was also included to verify the influence on decision-making of a Mayor's stability in office.

In addition to the aforementioned variables, this research includes two variables that, as far as we are aware, have not been used previously to explain decision-making related to the management of urban water services. On the one hand, the political transition to democracy that took place in Spain in the second half of the 1970s resulted in a decentralized model of government divided into four levels, namely, national, regional, provincial and local. In order to detect the possible influence of the ideology of higher levels of government on the decisions taken by local governments, the variable *PROVINCIAL GOVERNMENT* was used, which measures whether or not the ideology of the local government coincides with the ideology of the provincial government.

On the other hand, the objective of being re-elected may determine when certain

decisions are taken during a government's term of office. Considering that simply announcing the privatization of the water service normally sparks an adverse reaction from the general public (González-Gómez et al. 2009), it is reasonable to expect this measure to be adopted early on in the term, in the hope that voters will have forgotten about it by the next elections. In order to verify the relationship between the political cycle and decision-making we have introduced the variable *POLITICAL CYCLE*, which denotes whether contracting out takes place during the first or second half of the term of office.

Finally, several variables representing pragmatic and economic factors capable of affecting local government decisions on the management of water services have also been considered in our analysis. These include *POPULATION*, *FINANCIAL BURDEN* and *WATER CAPTURE SYSTEM*, the latter representing the complexity of providing the service. Table 3.2 presents some descriptive statistics for the variables, while an Appendix describes how they have been constructed and their respective data sources.

The second contribution our paper makes is that the explanatory variables are measured at the time the decision regarding the management of the urban water service was taken, rather than at a later date, as is the case in most previous studies (Dijkgraaf et al. 2003; Ohlsson 2003; Walls et al. 2005; Bel and Fageda 2008; Zullo 2009; Levin and Tadelis 2010). As indicated by Bel and Fageda (2007), the value of the explanatory variables at the time when the data are observed may differ substantially from the value when local governments took the decision to contract out. In our case, for example, what really makes sense is to account for the ideology of the local government in power when the decision to contract out actually was taken, rather than the ideology observed when the data are recorded. Hence, by considering the time dimension we expect to enhance the explanatory power of our model. Other recent papers that have accounted

for this issue include Miralles (2009), González-Gómez and Guardiola (2009), Bel et al. (2010), and González-Gómez et al. (2010).

Table 3.2 Sample description

	All municipalities (734)				Municipalities contracting-out (301)			
Variable	Mean [a]	Standard deviation	Minimum	Maximum	Mean [a]	Standard deviation	Minimum	Maximum
CONTRACTING-OUT	0.4101	-	0	1	-	-	-	-
PRIVATIZATION	-	-	-	-	0.6445	-	0	1
PP MAJORITY	0.1376	-	0	1	0.0831	-	0	1
PSOE MAJORITY	0.3488	-	0	1	0.5149	-	0	1
IU MAJORITY	0.0518	-	0	1	0.0299	-	0	1
PA MAJORITY	0.0217	-	0	1	0.0099	-	0	1
PP MINORITY	0.0463	-	0	1	0.0465	-	0	1
PSOE MINORITY	0.0858	-	0	1	0.1595	-	0	1
IU MINORITY	0.0354	-	0	1	0.0232	-	0	1
PA MINORITY	0.0191	-	0	1	0.0131	-	0	1
IDEOLOGY	0.1839	-	0	1	0.1296	-	0	1
PROVINCIAL GOVERNMENT	0.8079	-	0	1	0.8870	-	0	1
INCOME PER CAPITA	2,253	899	369	8,100	2,427	1,056	386	8,100
PUBLIC EMPLOYMENT	9.14	5.44	0	42.62	8.00	3.53	0	23.62
URBAN AGGLOMERATION	0.2221	-	0	1	0.3355	-	0	1
CONSORTIUM	0.2882	-	0	1	0.3953	-	0	1
GOVERNMENT SWITCH	0.4578	-	0	1	0.9401	-	0	1
POLITICAL CYCLE	-	-	-	-	0.6943	-	0	1
POPULATION	7.36	24.75	0.10	503.25	13.42	36.69	0.10	503.25
FINANCIAL BURDEN	3.739	2.857	0.001	25.597	5.016	2.997	0.074	25.323
WATER CAPTURE SYSTEM	0.7043	-	0	1	0.8372	-	0	1

[a] The mean for the qualitative variables represents the percentage of cases with value 1.

4. Methodological notes

The decision-making process regarding the management of the urban water service can be estimated by a probit selection model (Van de Ven and Van Praag, 1981). Local governments must first decide whether to continue providing the service themselves or, on the contrary, to contract out. The result of this choice is represented by the observed binary variable *CONTRACTING-OUT*, which takes a value of 1 if the local government contracts out the urban water service and 0 if the council continues to provide the service. Once this decision has been taken, if a local government opts for contracting out, it must then choose either a public firm or a private firm. The result of this second binary choice, which is only observable if *CONTRACTING-OUT* = 1, is represented by the variable *PRIVATIZATION*, which takes a value of 1 if the service is contracted out to a private firm and 0 if it is contracted out to a public firm.

Let us now assume that behind the first of these decisions there is a latent unobservable variable, namely $CONTRACTING\text{-}OUT^{*}$, such that *CONTRACTING-OUT* = 1 if $CONTRACTING\text{-}OUT^{*} > 0$ and *CONTRACTING-OUT* = 0 if $CONTRACTING\text{-}OUT^{*} \leq 0$. Likewise, there is another latent unobservable variable underlying the decision to privatize, namely $PRIVATIZATION^{*}$, such that *PRIVATIZATION* = 1 if $PRIVATIZATION^{*} > 0$ and *PRIVATIZATION* = 0 if $PRIVATIZATION^{*} \leq 0$. This decision process might be formalized as follows:

$$CONTRACTING\text{-}OUT = \begin{bmatrix} 1 \text{ if } CONTRACTING\text{-}OUT^{*} > 0 \\ 0 \text{ if } CONTRACTING\text{-}OUT^{*} \leq 0 \end{bmatrix} \quad (1)$$

$$PRIVATIZATION = \begin{bmatrix} 1 \text{ if } CONTRACTING\text{-}OUT = 1 \text{ and } PRIVATIZATON^{*} > 0 \\ 0 \text{ if } CONTRACTING\text{-}OUT = 1 \text{ and } PRIVATIZATON^{*} \leq 0 \\ \text{not observed if } CONTRACTING\text{-}OUT = 0 \end{bmatrix} \quad (2)$$

By introducing two sets of independent variables, namely $X_{CONTRACTING\text{-}OUT}$ and $X_{PRIVATIZATION}$, to explain our latent variables, we can define a two-equation system. The first equation describes the probability of experiencing the selecting event, Probit ($CONTRACTING\text{-}OUT = 1 \mid X_{CONTRACTING\text{-}OUT}$) = $\alpha X_{CONTRACTING\text{-}OUT}$, while the second, defined only if $CONTRACTING\text{-}OUT = 1$, represents the outcome of the second choice, Probit ($PRIVATIZATION = 1 \mid X_{PRIVATIZATION}$) = $\beta X_{PRIVATIZATION}$; α and β being two vectors of unknown regression parameters. This system can be linearly stated as:

$$CONTRACTING\text{-}OUT^{*} = \alpha X_{CONTRACTING\text{-}OUT} + \varepsilon_{CONTRACTING\text{-}OUT} \quad (3)$$

$$PRIVATIZATION^{*} = \beta X_{PRIVATIZATION} + \varepsilon_{PRIVATIZATION} \quad (4)$$

with ($\varepsilon_{CONTRACTING\text{-}OUT}$, $\varepsilon_{PRIVATIZATION}$) being a zero-mean unit-variance bivariate normal random variable.

The two-equation probit selection model comprising equations (3) and (4) has been estimated by maximum likelihood using *Stata 11* software. In addition, the correlation between errors is not found to be significantly different from zero (the *p-value* for the *Wald test* is 0.695), so the hypothesis that both equations are independent cannot be rejected. Hence, in Table 3.3 we present the results from the estimation of each separate equation independently, which in the absence of correlation yields unbiased and more efficient estimates of the parameters of interest (Cameron and Trivedi 2009).

Table 3.3 Ideology and political motivations in the choice of management for urban water services

			Differentiating only between right and left-wing ideology		Ignoring the time dimension of the data	
Variable [a]	Contracting-out	Privatization	Contracting-out	Privatization	Contracting-out	Privatization
Ideological motivations						
PP MAJORITY	0.6784 (*0.002*)***	-0.1760 (*0.637*)	-	-	-0.5844 (*0.007*)***	0.0065 (*0.983*)
PSOE MAJORITY	1.1690 (*0.000*)***	-0.1672 (*0.498*)	-	-	-0.5820 (*0.009*)***	-0.8736 (*0.014*)**
IU MAJORITY	-0.1636 (*0.529*)	-0.9792 (*0.042*)**	-	-	-0.7846 (*0.001*)***	-0.0720 (*0.821*)
PA MAJORITY	-0.6072 (*0.265*)	-0.2057 (*0.774*)	-	-	-0.8301 (*0.010*)**	-0.1777 (*0.607*)
PP MINORITY	0.7737 (*0.005*)***	-0.0242 (*0.950*)	-	-	-0.2129 (*0.245*)	-0.1580 (*0.470*)
PSOE MINORITY	1.4937 (*0.000*)***	0.2826 (*0.352*)	-	-	-0.3234 (*0.124*)	-0.2771 (*0.405*)
IU MINORITY	0.2279 (*0.449*)	0.0986 (*0.875*)	-	-	-0.4087 (*0.055*)*	-0.0387 (*0.885*)
PA MINORITY	-0.4084 (*0.404*)	-	-	-	-0.7887 (*0.001*)***	-
IDEOLOGY	-	-	-0.0609 (*0.705*)	-0.0482 (*0.848*)	-	-
PROVINCIAL GOVERNMENT	0.6210 (*0.000*)***	0.5433 (*0.073*)*	0.4369 (*0.007*)***	0.5656 (*0.055*)*	0.2792 (*0.260*)	1.3115 (*0.001*)***
Political motivations						
INCOME PER CAPITA	8.4e-5 (*0.213*)	2.0e-4 (*0.009*)***	6.3e-5 (*0.309*)	2.1e-4 (*0.006*)***	3.4e-4 (*0.000*)***	-0.5e-5 (*0.138*)
PUBLIC EMPLOYMENT	-0.0403 (*0.000*)***	-0.0094 (*0.689*)	-0.0379 (*0.001*)***	-0.0118 (*0.610*)	-0.0452 (*0.000*)***	0.0042 (*0.855*)
URBAN AGGLOMERATION	0.5128 (*0.001*)***	-0.4176 (*0.020*)**	0.4897 (*0.000*)***	-0.4368 (*0.015*)**	0.0862 (*0.523*)	-0.0433 (*0.828*)
CONSORTIUM	0.7018 (*0.000*)***	-0.0880 (*0.603*)	0.6021 (*0.000*)***	-0.1143 (*0.486*)	0.5006 (*0.000*)***	0.2775 (*0.113*)
GOVERNMENT SWITCH	-0.1579 (*0.284*)	0.1792 (*0.411*)	-0.0913 (*0.479*)	0.2282 (*0.282*)	0.0768 (*0.652*)	0.3837 (*0.130*)
POLITICAL CYCLE	-	0.4590 (*0.008*)***	-	0.4319 (*0.010*)**	-	0.5232 (*0.002*)***
Pragmatic reasons						
POPULATION	0.0232 (*0.010*)**	0.0342 (*0.002*)***	0.0164 (*0.097*)*	0.0357 (*0.001*)***	0.0233 (*0.027*)**	0.0193 (*0.013*)**
SQUARE OF POPULATION	-4.7e-8 (*0.006*)***	-1.4e-8 (*0.005*)***	-4.7e-8 (*0.081*)*	-1.4e-7 (*0.002*)***	-4.1e-8 (*0.019*)**	-8.2e-8 (*0.033*)**
FINANCIAL BURDEN	0.1143 (*0.000*)***	-0.1123 (*0.004*)***	0.1344 (*0.000*)***	-0.1132 (*0.003*)***	0.0334 (*0.105*)	0.0387 (*0.405*)
WATER CAPTURE SYSTEM	0.5578 (*0.000*)***	-0.5489 (*0.022*)**	0.6054 (*0.000*)***	-0.5193 (*0.027*)**	0.7760 (*0.000*)***	-0.6872 (*0.005*)***
CONSTANT	-2.5070 (*0.000*)***	0.1291 (*0.814*)	-1.7053 (*0.000*)***	0.0149 (*0.976*)	-1.4534 (*0.000*)***	0.7360 (*0.055*)*
Log *pseudo*-likelihood	-326.12	-168.91	-381.59	-172.72	-368.97	-172.58
Wald test (χ^2) [b]	201.15 (*0.000*)	41.90 (*0.001*)	159.60 (*0.000*)	36.83 (*0.002*)	158.34 (*0.000*)	40.51 (*0.001*)
Pseudo R^2	0.343	0.137	0.231	0.118	0.257	0.118
Observations	734	301	734	301	734	301
Hits	80.2%	72.6%	73.4%	70.1%	73.9%	69.1%

[a] The *p-values* are between brackets (* significant at 10%, ** significant at 5%, *** significant at 1%); [b] Probability of model non significance in brackets.

5. Results

5.1. The decision to contract out

The equation of the determinants of the decision to contract out is globally significant and the goodness-of-fit larger than reported in similar studies. Correct answers amount to 80.2%. Regarding ideology, the municipalities governed by PSOE (centre/left) and PP (centre/right) are more likely to contract out the urban water service, regardless of whether or not they have a majority. This result indicates that the need to occupy the centre of the Spanish political spectrum leads these two parties to converge in many of their political decisions. Moreover, the probability of the water service being contracted out increases when the ideology of the local government coincides with the ideology of the provincial government. This probably makes relations between the two levels of government much easier, also facilitating the bureaucratic action necessary to arrange the change of management, which might be of paramount importance for small municipalities lacking the capacity necessary to manage contracts.

Furthermore, and concerning political motivations, municipalities with a larger proportion of public employees are more reluctant to contract out water services. It is reasonable to believe that water service workers are the first to oppose contracting out, as this could entail changes in their working conditions. This pressure may later receive the support of other public servants, who may think they will be next in line to be faced with contracting out (Christoffersen and Paldam 2003). Moreover, administrative acknowledgement of the existence of urban agglomerations and the creation of consortiums boosts the contracting out of the water service. The municipalities that belong to these associations contract out the management to a body that centralizes the activity for an entire area as a part of a strategy aimed at taking full advantage of the

economies of scale that exist in urban water distribution.

The results obtained for pragmatic and economic motivations are those commonly obtained in the literature. Albeit with a decreasing effect, the larger the municipality the greater the likelihood of the urban water service being contracted out. Moreover, local governments with financial problems tend to contract out water services more as a way of guaranteeing supply, while at the same time correcting local government financial imbalances. Finally, in those municipalities where the water supply involves greater complexity, the likelihood of contracting out increases.

5.2. Public or private management?

The equation of the determinants of urban water service management after the decision has been made to contract out is globally significant,[16] although the goodness-of-fit-is noticeably worse than in the contracting-out equation. Furthermore, the percentage of hits is 72.6%. With respect to the variables representing ideology, only *IU MAJORITY* is significant, suggesting that this left-wing party rejects delegating the management of the water service to a private firm. Moreover, the concurrence of ideologies between local and provincial governments also appears to favor the decision to privatize.

Concerning political motivations, the probability of privatizing the urban water service is greater in the second half of the term of office, hence contradicting our prior expectation. The reason could be the drawn-out procedure of public calls for proposals and concession licenses under Spanish law and also the bureaucracy involved, all of which substantially delay the privatization process. As a result, even if the decision to privatize is taken in the first half of the term, it is highly possible that it will not take effect until the second half. Furthermore, municipalities that belong to an urban

[16] *PA MINORITY* was not included in this equation because it led to a problem of perfect multicollinearity.

agglomeration are less likely to privatize the management of the urban water service, as the regional government itself acts as a promoter of public management of the water service in such cases.

In line with previous research, our results also suggest that private firms tend to procure the right to supply the water service in larger cities with higher than average levels of income and where extracting water does not require the use of complex means, due to the expectation that profits will be larger. Moreover, private firms avoid providing the urban water service in municipalities with serious financial problems, as this would probably require large investments to be made because the water supply networks can be expected to be in poorer condition.

5.3. Are the data and their time dimension really important?

In order to test for the interest of our contributions concerning the use of a wide range of variables representing ideology and political motivations, as well as the consideration of the time dimension of the data, we have performed two final exercises. In the first place, we have re-estimated our model including just one variable that distinguishes between right and left-wing parties in power, instead of our set of variables representing the ideology of the Mayor and majority or minority rule. The results are also reported in Table 2. While the results for the remaining explanatory variables in the model are robust to this change, this new variable representing ideology is not found to be statistically significant in either the contracting-out equation or the equation of privatization (the *p-values* for a standard *t-test* are 0.705 and 0.848, respectively). Furthermore, the explanatory power of both equations decreases noticeably.

In the second place, we have re-estimated the model using the values observed at the end of the period for all explanatory variables, instead of the values at the time of

decision-making, except for *WATER CAPTURE SYSTEM* and *URBAN AGGLOMERATION*, which have no time dimension, in addition to *POLITICAL CYCLE*, which can be computed only at the time of decision-making. The results obtained are presented in the last two columns of Table 2 and reveal that ignoring the time dimension of the explanatory variables noticeably worsens the goodness-of-fit and joint significance of our model, thus reducing its explanatory power. The percentage of correct answers is also lower in both equations. Turning to the estimated parameters, some variables representing ideology and political motivations are also found to be statistically significant when the time dimension of decision-making is ignored. Nevertheless, finding an explanation for these results that makes sense becomes an almost impossible task. Finally, the significance of variables such as *FINANCIAL BURDEN* changes when the time dimension is not accounted for, leading to results contrary to expectations and, in some cases, hardly reconcilable with theory.

6. Concluding remarks

Local governments in developed countries have been entitled, over the last few decades, to choose the form of management for municipal services. While a great deal of research has been devoted to studying the determinants of local governments' decision-making, the influence of ideological and political motivations has received little attention. In this paper, we study the influence of such motivations on the choice of management for the urban water service, with data from a sample of Spanish municipalities. Concerning our contributions, we use a detailed set of variables representing ideology and political motivations which goes far beyond that used in previous research. As far as we are aware, some of these variables have never been considered in this field of research. In addition, the values of the variables that explain

decision-making are observed at the time decisions are made rather than at a later date.

Our results show that ideology and political motivations might well have a greater influence on local governments' decisions regarding the management of urban water services than previous research suggests. In addition, our findings also indicate that in order to capture the influence of ideology on local government management choices, it might not be enough to distinguish between left and right-wing parties in power alone, as most papers do. Instead, and information permitting, it would be preferable to introduce variables that represent the ideologies of all political parties. The largest parties, normally those which dispute the centre of the political spectrum, tend to converge in many of their decisions, so researchers are more likely to find differences in political decisions when the parties that are closer to the ideological extremes are taken into account. Furthermore, insofar as it could improve the explanatory power of the models, including the value of the determinants of local government decisions at the time decisions are made, rather than at a later date, is also highly advisable, particularly in the case of variables subject to important changes over time.

Finally, we would like to highlight how including the appropriate variables and considering their time dimension has allowed us to assert that ideological and political motives do matter in the public choice of urban water service management. If this were also the case in other local public services, researchers may have to reconsider attributing more importance to ideology and political factors in local government decision-making than the orthodox literature has to date. Further research in this direction is undoubtedly required.

7. References

Bel, G. & Fageda, X. (2008), "Reforming the local public sector: Economics and politics in privatization of water and solid waste", Journal of Economic Policy Reform, 11 (1), 45–65.

Bel, G. & Fageda, X. (2007). Why do local governments privatize public services? A survey of empirical studies. *Local Government Studies*, *33*(4), 517–534.

Bel, G. & Fageda, X. (2009). Factors explaining local privatization: a meta-regression analysis. *Public Choice, 139*(1), 105–119.

Bel, G. & Fageda, X. (2010). Partial privatisation in local services delivery: An empirical analysis on the choice of mixed firms. *Local Government Studies, 36*(1), 129–149.

Bel, G. & Miralles, A. (2003). Factors influencing privatization of urban solid waste collection in Spain. Urban Studies, 40(7), 1323–1334.

Bel, G., Fageda, X. & Mur, M. (2010). ¿Por qué se privatizan servicios en los municipios (pequeños)? Evidencia empírica sobre residuos sólidos y agua. *Hacienda Pública Española. Revista de Economía,* 192(1), 33–58.

Benton, J. E. & Menzel, D. C. (1992). Contracting and franchising county services in Florida. *Urban Affairs Review*, 27(3), 436– 456.

Bhatti, Y., Olsen, A. L. & Pedersen, L. H. (2009). The effects of administrative professionals on contracting out. Governance: An International Journal of Policy, Administration, and Institutions, 22(1), 121-137.

Brown, T., Potosky, M. & Slyke, D. V. (2008). Changing modes of service delivery: costs and constraints. Environment and Planning C: Government and Policy, 26(1),

127–143.

Buchanan, J.M. & Tullock, G. (1962). *The calculus of consent*. University of Michigan Press.

Cameron, A.C. & Trivedi, P.K. (2009). *Microeconometrics: methods and applications*. New York: Cambridge University Press.

Chandler, T. D. & Feuille, P. (1994). Cities, unions, and the privatization of sanitation services. *Journal of Labor Research*, 15(1), 53–71.

Christoffersen H. & Paldam M. (2003). Markets and municipalities: A study of the behavior of the Danish municipalities, *Public Choice*, 114: 79–102

Dijkgraaf, E., Gradus, R.H.J.M. & Melenberg, B. (2003). Contracting out refuse collection. *Empirical Economics*, 28(3), 553–570.

Downs, A. (1957). An economic theory of democracy. Harper and Row.

Dubin, J. A. & Navarro, P. (1988). How markets for impure public goods organize: the case of household refuse collection. *Journal of Law, Economics, & Organization*, 4(2), 217–241.

Feldman, T. R. (1986). *Efficiency and the provision of municipal services*. Harvard University: Unpublished doctoral thesis.

Ferris, J. (1986). The decision to contract out: an empirical analysis. *Urban Affairs Quarterly, 22*(2), 289-311.

Ferris, J. & Graddy, E. (1988). Production choices for local government services. *Journal of Urban Affairs*, 10(3), 273–289.

Ferris, J. & Graddy, E. (1994). Organizational choices for public service supply. *Journal of Law, Economics, & Organization*, 10(1), 126–141.

González-Gómez, F. & Guardiola, J. (2009). A duration model for the estimation of the contracting-out of urban water management in Southern Spain. *Urban Affairs Review, 44*(6), 886-906.

González-Gómez, F., Guardiola, J. & Ruiz-Villaverde, A. (2009). Reconsidering privatization in the governance of water in Spain. *Municipal Engineer*, *162*(3), 159-164.

González-Gómez, F., Picazo-Tadeo, A.J. & Guardiola, J., (2010). Why do local governments privatise the provision of water services? Empirical evidence from Spain. *Public Administration*. In Press.

Greene, J. D. (1996). Cities and privatization: examining the effects of fiscal stress, location, and wealth in medium-sized cities. *Policy Studies Journal*, 24, 135–144.

Guardiola, J., González-Gómez, F., & García-Rubio, M.A. (2010). Is time really important for research into contracting out public services in cities? Cities, 27(5), 369–376.

Hebdon, R. & Jalette, P. (2008). The restructuring of municipal services: a Canada–United States Comparison. *Environment and Planning C: Government and Policy*, 26(1), 144–158.

Hefetz, A. & Warner, M. (2004). Privatization and Its Reverse: Explaining the Dynamics of the Government Contracting Process. *Journal of Public Administration Research and Theory,* 14(2), 171–190.

Hefetz, A. & Warner, M. (2007). Beyond the market versus planning dichotomy: Understanding privatisation and its reverse in US cities. *Local Government Studies*, 33(4), 555–572.

Hirsch, W. Z. (1995). Factors important in local governments' privatization decisions.

Urban Affairs Review, 31(2), 226–243.

Holian, M.J. (2009). Outsourcing in US cities, ambulances and elderly voters. *Public Choice*, 141, 421–445.

Joassart-Marcelli, P. & Musso, J. (2005). Municipal service provision choices within a metropolitan area. Urban Affairs Review, 40(4), 492-519

Kodrzycki, Y. K. (1998). Fiscal pressures and the privatization of local services. *New England Economic Review*, January/February, 39–50.

Lamothe, S., Lamothe, M. & Feiock, R. C. (2008). Examining Local Government Service Delivery Arrangements Over Time. *Urban Affairs Review*, 44(1), 27–56.

Levin, J. & Tadelis, S. (2010). Contracting for government services: Theory and evidence from US cities. *Journal of Industrial Economics*, *58*(3), 507-541.

López-de-Silanes, F., Shleifer, A. & Vishny, R. W. (1997). Privatization in the United States. *Rand Journal of Economics*, 28(3), 447–471.

Martínez Rodríguez, J. (2004). Los determinantes de la contratación externa de servicios municipales en España. Murcia: Asociación Murciana de Ciencia Regional.

Marvel, M. K. & Marvel, H. P. (2007). Outsourcing Oversight: A Comparison of Monitoring for In-House and Contracted Services. Public Administration Review, 67(3), 521-530.

McGuire, R. A., Ohsfeldt, R. L. & Van Cott, T. N. (1987). The determinants of the choice between public and private production of publicly funded service. *Public Choice*, 54, 211–230.

Ménard, C. & Saussier, S. (2000). Contractual choice and performance: the case of water supply in France. *Revue d'Économie Industrielle*, 92, 385–404.

Miralles, A. (2009). A duration model analysis of privatization of municipal of water services. *Revista de Economía Aplicada, XVII*(50), 47-75.

Miranda, R. A. (1994). Explaining the privatization decision among local governments in the United States. *Urban Policy and Research*, 5, 231–274.

Morgan, D. R. & Hirlinger, M. W. (1991). Intergovernmental Service Contracts: A Multivariate Explanation. *Urban Affairs Review,* 27(1), 128–144

Morgan, D. R., Hirlinger, M.W. & England, R. E. (1988). The decision to contract out city services: a further explanation. Western Political Quarterly, 41, 363–372.

Morgan, D. R., Hirlinger, M.W. & England, R. E. (1988). The decision to contract out city services: a further explanation. *Western Political Quarterly*, 41(2), 363–372.

Nelson, M. A. (1997). Municipal government approaches to service delivery: an analysis from a transaction cost perspective. *Economic Inquiry*, 35(1), 82–96.

Ohlsson, H. (2003). Ownership and production costs: choosing between public production and contracting-out in the case of Swedish refuse collection. *Fiscal Studies*, 24(4), 451–476.

Osborne, M.J. & Slivinski, A. (1996). A model of political competition with citizen-candidates. *Quarterly Journal of Economics, 111*(1), 65-96.

Pérard, E. (2009). Water supply: Public or private? An approach based on cost of funds, transaction costs, efficiency and political costs. *Policy and Society*, 27(3), 193-219.

Stein, R. M. (1990). *Urban Alternatives. Public and private markets in the provision of local services.* Pittsburgh: University of Pittsburgh Press.

Tavares, A.F. & Camöes, P.J. (2007). Local service delivery choices in Portugal: A political transaction costs framework. *Local Government Studies, 33*(4), 535-553.

Van de Ven, W. & Van Praag, B. (1981). The demand for deductibles in private health insurance. A probit model with sample selection. *Journal of Econometrics, 17*(2), 229-252.

Walls, M., Macauley, M. & Anderson, S. (2005). Private markets, contracts, and government provision. What explains the organization of local waste and recycling markets? *Urban Affairs Review*, 40(5), 590-613.

Warner, M. E. & Hebdon, R. (2001). Local government restructuring: privatization and its alternatives. *Journal of Policy Analysis and Management*, 20(2), 315–336.

Warner, M. & Hefetz, A. (2002). Applying market solutions to public services: an assessment of efficiency, equity and voice. *Urban Affairs Review*, 38(1), 70–89.

Zullo, R. (2009). Does fiscal stress induce privatization? Correlates of private and intermunicipal contracting, 1992-2002. *Governance: An International Journal of Policy, Administration, and Institutions*, 22(3), 459-481.

Zullo, R. (2009). Does fiscal stress induce privatization? Correlates of private and intermunicipal contracting, 1992-2002. Governance: An International Journal of Policy, Administration, and Institutions, 22(3), 459-481.

Appendix

Variables: description and sources

Variable	Description	Source
CONTRACTING-OUT	Dummy variable that takes a value of 1 if the council has contracted out urban water services at the end of the period 1986-2006 and 0 otherwise	Town councils and firms
PRIVATIZATION	Dummy variable that takes a value of 1 if the council has privatized the management of urban water services at the end of the period 1986-2006 and 0 if the service has been contracted out to a public firm. This variable is only defined if water services have been contracted out	
PP MAJORITY	Dummy variable that equals 1 if PP was in power in the local government and held a majority when the decision of contracting out was taken. If the municipality did not contract out, it equals 1 if this party was in power with a majority of votes at the end of the period. Otherwise, this variable takes a value of 0	Home Office and Ministry of Regional Policy
PSOE MAJORITY	As above but with PSOE	
IU MAJORITY	As above but with IU	
PA MAJORITY	As above but with PA	
PP MINORITY	Dummy variable that equals 1 if PP was in power in the local government and held a minority when the decision of contracting out was taken. If the municipality did not contract out, it equals 1 if this party was in power with a minority of votes at the end of the period. Otherwise, this variable takes a value of 0	
PSOE MINORITY	As above but with PSOE	
IU MINORITY	As above but with IU	
PA MINORITY	As above but with PA	
IDEOLOGY	Dummy variable that equals 1 if PP (right-wing party) was in power in the local government when the decision of contracting out was taken, and if the municipality did not contract out and PP was in power at the end of the period. Conversely, it takes a value of 0 if PSOE, IU or PA (left-wing parties) were in power when the decision of contracting out was taken, and if the municipality did not contract out and PSOE, IU or PA were in power at the end of the period	
PROVINCIAL GOVERNMENT	Dummy variable that equals 1 if the ideology of the provincial and municipal governments coincides when the decision of contracting out was taken, and 0 if it does not coincide. If the municipality did not contract out, it takes the value corresponding to the end of the period	Home Office

Appendix (continuation)

Variable	*Description*	*Source*
INCOME PER CAPITA	Euros per inhabitant. If the municipality contracts out, it takes the value from the year before contracting out. In the case of not contracting out, it takes the average value over the period	Andalusia Government
PUBLIC EMPLOYMENT	Percentage of public employment over total employment in the municipality. If the municipality contracts out, it takes the value from the year before the decision. If not, it takes the average value over the period	
URBAN AGGLOMERATION	Dummy variable that takes a value of 1 if the municipality belongs to an urban agglomeration and 0 otherwise	
CONSORTIUM	In the case of contracting out, this dummy variable takes a value of 1 if the council belonged to a consortium the previous year and 0 otherwise. In the case of not contracting out, it takes a value of 1 if the municipality belongs to a consortium in the middle of the period and 0 if not	Ministry of Regional Policy
GOVERNMENT SWITCH	This dummy variable equals 1 if the municipality contracts out and the decision is taken by a recently-elected government or if the municipality did not contract out and there has been a change of government during the period studied. Conversely, it takes a value of 0 if the municipality contracts out and the decision is taken by a government already established in power or if the municipality did not contract out and there has been no change of government during the period	
POLITICAL CYCLE	Dummy variable only defined in the case of contracting out that takes a value of 1 if the municipality contracts out in the two final years of government and 0 if it contracts out inside the two first years of government	Town councils and firms
POPULATION	Population in 1,000s of inhabitants. If the municipality contracts out, it takes the value from the year prior to contracting out. In the case of not contracting out, it takes the average value over the period	National Institute of Statistics
FINANCIAL BURDEN	Sum of financial expenditures over sum of ordinary revenues of the local government. In the case of contracting out, this variable takes the value of the year before the decision was taken. In the case of not contracting out, it takes the mean over the period	Ministry of Economic Affairs
WATER CAPTURE SYSTEM	Dummy variable taking a value of 1 if water is captured using mechanical means and 0 if it is captured using the force of gravity	Ministry of Regional Policy

CHAPTER 4

THE PUBLIC CHOICE OF URBAN WATER SERVICE MANAGEMENT: A MULTI-CRITERIA APPROACH

1. Introduction

Local governments are the level of public administration that is closest to citizens. Following the principles of good governance, city councils should provide public services in pursuit of greater efficiency and universal orientation (Goldsmith, 1992). The environment in which local governments must respond to citizens and take decisions is increasingly complex. There are several factors that contribute to complicating the scenario of local action, primarily in large and medium-sized cities. The first is the population growth experienced in these urban areas (Antrop, 2004). This is due to both the population growth experienced worldwide in recent decades, as the change in the productive structure towards economies that dominate industrial and service activities, which has led to a gradual exodus from rural areas to cities. Secondly, local governments are increasing their competences and taking on increasing responsibilities (Martínez-Vázquez & Timofeev, 2009). For instance, it was unthinkable a few decades ago that Councils would provide childcare for their workers, social care services to the elderly and disabled, or organised leisure activities for their citizens.

In this context, an important decision that local governments face in many countries is to decide what type of entity should manage the services within their jurisdiction. The liberalisation and deregulation of economies since the 80s has led to greater responsibility and more autonomy in local decisions (Goldsmith, 1992). Consequently, many municipal governments must decide what is more appropriate. Should they manage local services by themselves? Should they establish public autonomous entities? Should they privatise the management of local services?

The case of urban water service management is a particularly important decision. Intuition or political and ideological debate should never be considered sufficient for the public choice of water service management. The interest of citizens

should not be subject to arbitrary decisions on behalf of policy-makers. Apart from considering the citizens' voice, local governments must rely on management tools that enable them to take rational decisions. In this context it is important to bear in mind that decision-making processes usually have to take into account several criteria. In these situations, the usefulness of Multi-Criteria Analysis (MCA) may be two-fold: Ex-ante analysis can introduce analytical rationality to decision-making; Ex-post analysis makes it possible to test whether past decisions were consistent, taking into account the time when the decision was taken, or whether they would be consistent in the current situation.

This research proposes using MCA as a tool for choosing the manager of water service. As far as we are aware, this would be the first time that MCA has been applied to this decision-making process. More specifically, the technique used is the Analytic Hierarchy Process (AHP). In order to illustrate how this technique is used, an ex-post analysis is carried out to evaluate the decision taken by the Local Government in the city of Granada (southern Spain) in 1997. For this purpose, we have used information from the minutes of the plenary sessions of the Council and the data available in technical reports from a special commission of experts created to help in the voting and decision-making processes of the town councillors. Finally, we also used information obtained through a questionnaire applied to a research group involved in water studies at the University of Granada. The main conclusion to be drawn is that, based on the information available at that time, the decision was consistent.

This chapter is structured as follows. Section 2 provides an overview of the management of urban water services in Spain and the reasons that may influence the choice of management option. Section 3 describes the AHP method. Section 4 shows

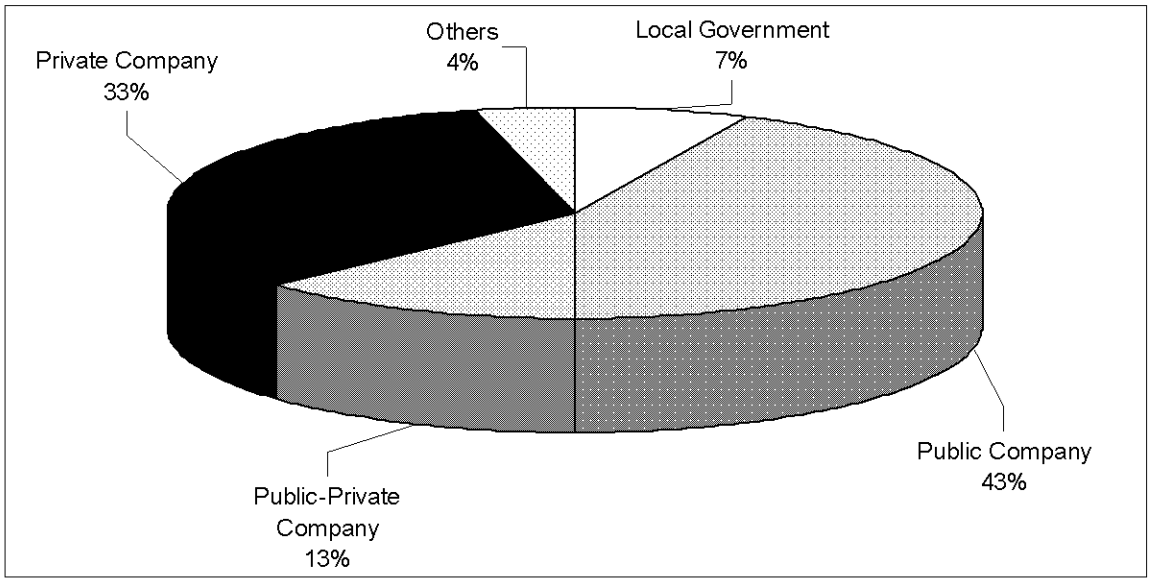
the results of applying the AHP technique to the case study. Finally, Section 5 concludes.

2. Management of urban water services in Spain

The legal framework that regulates the type of management for municipal services in Spain is constituted by Law 7/1985 of 2 April, regulating the Terms and Conditions of Local Government and Law 57/2003 of 16 December, on Local Government Modernisation Measures. Article 25 of the first of these laws stipulates that local government is responsible for urban water services.

The local government has the authority to decide the legal format for the provision of water services. Firstly, local policymakers may choose to manage the service from the council itself or outsource it. In the second case, service management may be transferred to an entirely public company, an entirely private company or to a mixed public-private partnership. However, municipalities can only privatise the management of the water service, because infrastructures still belong to the public administration. The company that holds the concession is responsible for the running of the service and the maintenance of the supply networks during the time arranged in the contract. At the end of the contract, the local government must decide again how the service is to be managed. Figure 4.1 shows the distribution of the type of management of water services according to population served in Spain.

Figure 4.1 Percentage of population served in Spain subject to different types of urban water service management



Source: AEAS (2010). Own elaboration with data from 2008.

As regards duration, we can say that the option of the service being managed by the city council itself or a public company is subject to revision at any time. Otherwise, the water service is either completely or partially outsourced to a private company for a given time after signing a concession contract. There is a limit of fifty years in contracts involving the execution of infrastructure works and operating the service and twenty-five years in those contracts solely referring to operations. At the end of the contract, the local government may again choose the alternative they consider the most suitable for the management of the urban water service.

Several papers have attempted to identify the factors behind the decisions taken by municipal governments in relation to the type of management for local public services. Recent literature reviews (Bel & Fageda, 2007; 2009) summarise four reasons

that influence the decision of local governments when choosing how to manage municipal services: 1) search for efficiency, 2) financial constraints of the municipalities, 3) ideology, and 4) political motivation. Specific research on urban water management confirms what generally happens in the rest of local public services: essentially pragmatic reasons explain local government decisions. There is evidence on this aspect for the management of urban water services in France (Mènard & Saussier, 2000), in the USA (Pérard, 2009) and in Spain (Miralles, 2009; González-Gómez & Guardiola, 2009; Guardiola et al, 2010; González-Gómez et al, 2010; Bel & Fageda, 2010).

As mentioned above, these studies aim to analyse the factors behind the decisions taken by local governments. These studies involve ex-post analyses, largely applying different discrete choice techniques. The information contained in these studies may be of interest to local political leaders, giving them a notion of what factors explain the decisions taken in other municipalities. However, local political leaders may also wish to answer other questions closely related to the management of services in the municipality. One example would be whether or not to change the type of water service management? Was the past choice of water service management a wise one? Is it worth renewing the contract held by the current concessionaire? The following section describes a methodology that can be used to answer such questions.

3. Methodological notes. General framework and description of MCA and AHP

3.1. MCA General Framework

The advent of the multi-criteria decision paradigm in the 1970s constituted a major revolution in the field of decision theory (Romero & Rehman, 1987; Hajkowicz & Collins, 1997). Until then, the prevailing economic theory based on the neoclassical school of thought explained the decisions of economic agents under the assumption of

rational behaviour and the ability to set agent preferences based on the optimisation of the decision based on a single criterion. The abstract rationality that neoclassical theories are based on is at odds with the empirical perception of economic agents, and decision makers in particular have a 'bounded rationality' (Simon, 1947). Moreover, empirical evidence also shows that decision makers do not optimise their decisions on the basis of a single criterion; on the contrary, most decisions should be based on a variety of objectives, which are usually in conflict (Romero & Rehman, 1987).

Based on an eminently positive approach, different MCA techniques aim to solve decision-making problems by considering a set of objectives and attempting to satisfy a set of goals associated with these objectives (Holt, 1998; Hajkowicz & Collins, 2007).

There are several classifications in relation to different MCA methods. Depending on whether the set of solutions generated was infinite or finite, we can distinguish between continuous and discrete MCA methods. In accordance with the characteristics of the decision problem to be analysed in this study, the public choice of urban water service management, we apply a discrete choice model.

3.2. AHP method

We chose the AHP (Saaty, 1977; 1980)[17] from a series of discrete choice techniques. The reasons for this are as follows: 1) its ability to handle uncertain, imprecise and subjective data; 2) its robustness in solving practical ranking problems; 3) its methodological clearness and mathematical simplicity (Tong & Bonissone 1984, Zimmermann 1987, Chen & Hwang, 1992; Deng 1999).

[17] The pairwise comparison method was first introduced by Fechner (1860), and developed by Thurstone (1927). However, it is correct to say that the AHP method based on pairwise comparison has been developed, refined and widely popularised by Saaty (1977, 1980). See also Stigler's law of eponymy.

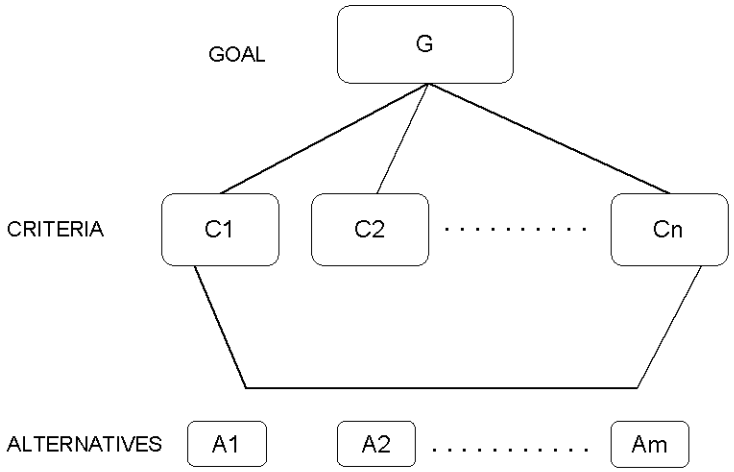
The AHP method consists of determining the relative importance of a given set of alternatives in relation to a predetermined goal, taking into account a number of pre-established appropriate criteria and sub-criteria. In practice, in order to introduce analytical thinking into a decision-making process, the AHP method is based on three basic principles (Saaty, 1995, p. 17): 1) the principle of constructing hierarchies, 2) the principle of establishing priorities and, 3) the principle of logical consistency. A first phase would involve designing the decision-making process, establishing for this purpose a proper hierarchical structure of the elements involved in the process. In a second phase, priorities would be estimated from the information and assessments obtained, taking into account the logical consistency of the process for each hierarchical level.

3.2.1 Phase one: identification and design of the decision-making problem

In the first phase a (flexible) hierarchical structure is designed in a multi-criteria context. The first step is to determine the overall objective, or goal (G), to be achieved. Then, the first hierarchical level would comprise the criteria to be taken into account when assessing the alternatives. These criteria can in turn be divided into successive lower levels of sub-criteria. Finally, after defining the criteria and possible sub-criteria, the next level would consist of the decision alternatives that the decision maker can choose from.

Figure 4.2 shows a schematic decision problem with a two-level hierarchical structure. Taking into account a goal (G) and a set of criteria C_i (i = 1, 2,…, N), a choice can be made from a set of alternatives A_j (j = 1, 2,…, M).

Figure 4.2 Hierarchical representation of criteria and alternatives



Source: Srdjevic & Pinto-Medeiros (2008, p. 882)

3.2.2. Phase two: priorities estimation

In a second phase we proceed to estimate priorities, once the decision-making problem has been designed (i.e., goal, criteria and alternatives have been clearly defined). The purpose of the process is to obtain a series of matrices made up of different assessments that, in turn, allow us to obtain priorities for each hierarchical level in regard to the next highest level. In a final step, we obtain the global priorities for the alternatives allowing decision-making.

Hierarchical level 1: criteria assessment

At this point we carried out an assessment through a process of pairwise comparison of the elements of the first hierarchical level i.e. the criteria in regard to the goal. The pairwise comparison is performed by applying the 9-point scale recommended by Saaty (Table 4.1). This assessment process usually involves close collaboration with a group of experts.

Table 4.1 Scale recommended for pairwise comparison

Intensity of importance on an absolute scale	*Definition*	*Explanation*
1	Equal importance	Two activities contribute equally to the objective
3	Moderate importance	Experience and judgment moderately favour one activity over another
5	Essential or strong importance	Experience and judgment strongly favour one activity over another
7	Very strong importance	An activity is strongly favoured and its dominance demonstrated in practice
9	Extreme importance	The evidence favouring one activity over another is of tile highest possible order of affirmation
2,4,6,8	Intermediate values between the two adjacent judgments	When compromise is needed
Reciprocals	If activity i has one of the above numbers assigned to it when compared with activity j, then j has the reciprocal value when compared with i.	
Rational	If consistency were to be forced by obtaining n numerical values to span the matrix	

Source: Saaty (1990, p. 15).

Thus, the first matrix is obtained from a sequence of judgments (through pairwise comparisons) of N x (N-1)/2 comparing the relative importance of criteria in regard to the goal, using Saaty's recommended scale for this purpose.

$$A = \begin{pmatrix} a_{11} & a_{12} & \dots & a_{N} \\ a_{21} & a_{22} & \dots & a_{2N} \\ \dots & \dots & \dots & \dots \\ a_{N1} & a_{N2} & \dots & a_{NN} \end{pmatrix} \qquad (1)$$

In relation to the estimation of priorities for each hierarchical level, it is important to ensure logical consistency in the collection of assessments by experts. This

involves fulfilling two requirements, transitivity and proportionality. First, order relationship between assessments must be respected. Namely, if A is preferred to B and B to C, then A must be preferred to C. Second, proportions between the orders of magnitude of assessments, with a little margin of error or inaccuracy, must be respected. Namely, if A is 3 times more preferred than B and B is 2 times more preferred than C, A should be 6 times more preferred than C. The above example would be a 100% consistent judgment, as it satisfies the requirement of transitivity and proportionality. However, we must consider that in a normal situation, decision makers do not make entirely consistent judgments.

If through collaboration with perfectly rational experts, we estimate the priorities associated with the judgments, it is verified that the values obtained for pairwise comparisons actually represent the ratios between the priorities given to the corresponding functions: $a_{ij} = w_i / w_j$ for all i and j. Thus, the priorities (w_i) of each function could easily be determined from the N x (N-1) / 2 values of a_{ij} that experts have stated. However, perfect consistency in the assessments of decision makers rarely occurs in reality. There are several methods for approximating these priorities to overcome this obstacle. The two methods most used in the literature are described below.

(a) The principal right eigenvector (EM)

This method was proposed by Saaty himself (1980). According to this author, EM should be used to estimate priorities according to the rating scale described above (Table 4.1). This assertion is based on the eigenvector being a continuous function of the elements of the matrix, so if the matrix is consistent, it is possible to achieve right priorities using the EM (Saaty, 2003). In the case that the elements of the matrix are slightly perturbed in the process through a subjective assessment, the eigenvector

retrieves the value of the scale above (slightly different), hence producing a matrix of consistent judgments. Therefore, given a reciprocal matrix of paired comparisons, A = (a_{ij}) with $a_{ij} > 0$, the priority vector 'w' obtained from this method is given by the following expression:

$$A\,w = \lambda_{max}\,w, \qquad \sum_{i=1}^{n} w_i = 1 \quad \text{(normalised)} \qquad (2)$$

where: λ_{max} is maximum eigenvalue of the matrix A obtained by solving:

$$\det(\lambda I - A) = |\lambda I - A| = 0 \qquad (3)$$

Additionally, this procedure is often accompanied by measures of consistency such as the Consistency Index (CI) or sensitivity analysis. The most used is the CI, which measures the level of inconsistency in ratings. Usually tolerating up to 10% of inconsistency, this index is calculated as follows:

$$CI = \frac{\lambda_{max} - n}{n - 1} \qquad (4)$$

(b) The Geometric Mean Vector (GMM)[18]

Although Saaty believes that GMM is an approach to EM that provides good results only for situations of little inconsistency, this method is supported by other authors (Crawford & Williams, 1985; Barzilai et al., 1987; Barzilai, 1997). Crawford & Williams (1985) consider that the eigenvector is not the only vector-valued function of judgment matrices that provides the correct scale when the matrix happens to be consistent. There are many others such as the vector of row sums, the vector of the inverse of columns sum, etc. In particular, given a reciprocal matrix of paired

[18] Also referred in the literature as the Logarithmic Least Squares Method (LLSM)

comparisons, A = (a_{ij}) with $a_{ij} > 0$, the priorities obtained by geometric mean are given by:

$$w_i = \left(\prod_{j=1,\ldots,n} a_{ij} \right)^{1/n} \quad i = 1,\ldots,n \qquad \sum_{i=1}^{n} w_i = 1 \ \text{(normalised)} \quad (5)$$

Crawford & Williams (1985) prefer GMM because of its psychological characteristics and statistics and conclude that GMM, in comparison to EM, inter alia: 1) is statistically better, 2) easier to calculate, 3) gives rise to estimates of utility with known statistical properties, allowing tests of hypotheses, confidence interval estimation,…etc.

Furthermore, there are other methods of obtaining priorities such as those based on goal programming (Bryson, 1995) or regression (Laininen & Hämäläinen, 2003). In any case, despite statements by Saaty (1980) and Crawford & Williams (1985), there is no clear evidence of the absolute superiority of one method over another in the related literature (Fichtner, 1986).

Hierarchical level 2: alternatives assessment

In the absence of sub-criteria, the next step in the AHP is to set (usually by way of a group of experts) an evaluation of alternatives, through pairwise comparisons, to the hierarchical level 2 in regard to level 1 (criteria). A set of N matrices of size M x M would be created accordingly. In the same way as before, the corresponding vector of priorities is obtained for each matrix through one of the methods described above.

$$X_i = \begin{pmatrix} x_{11} & x_{12} & \ldots & x_{1M} \\ x_{21} & x_{22} & \ldots & x_{2M} \\ \ldots & \ldots & \ldots & \ldots \\ x_{M1} & x_{M2} & \ldots & x_{MM} \end{pmatrix} \quad i = 1,\ldots, N \qquad (6)$$

Each matrix X_i would associate a vector of priorities:

$$W_j^i = (w_1^1, w_2^1, ..., w_M^1), (w_1^2, w_2^2, ..., w_M^2), ..., (w_1^N, w_2^N, ..., w_M^N); \text{ i = 1,..., N; j = 1,..., M} \quad (7)$$

Finally, the global priorities ($Z_j = Z_1, Z_2, ..., Z_M$) of the alternatives the decision is going to be based on are derived from the sum of the products of the relative priorities obtained from the assessment of the alternatives multiplied by the relative priorities obtained from the assessment of the associated criteria.

$$Z_j = \left(\sum w_i . w_j^i\right) = \begin{pmatrix} (w_1.w_1^1)+(w_2.w_2^1)+...+(w_N.w_M^1) \\ (w_1.w_1^2)+(w_2.w_2^2)+...+(w_N.w_M^2) \\ (.....)+(.....)+...+(.....) \\ (w_1.w_1^N)+(w_2.w_1^N)+...+(w_N.w_M^N) \end{pmatrix} = \begin{pmatrix} Z_1 \\ Z_2 \\ ... \\ Z_M \end{pmatrix} \text{ i = 1,..., N; j = 1,..., M} \quad (8)$$

4. Application of the AHP in management choice of urban water services: the case of Granada

This section shows the results of applying the technique described above in a particular case. In 1997, the Local Government of Granada, a city of 498,365 inhabitants (metropolitan area) located in southern Spain, decided to incorporate a private partner in the shareholding of the municipal company managing urban water services. The municipal company was no longer a public company, but a mixed company. This research proposes an ex-post analysis to conclude whether or not that was a wise decision.

In order to carry out this application of AHP to the management choice of urban water services in the city of Granada, we have considered three main sources of information:

(1) Minutes from the Government Commission of the City of Granada related to the Record of management change of Water and Sewer Public Services, 24/96 between 1996 and 1997.

(2) Technical reports (legal and economic) and documentation taken into account by the corporate members of the Council of Granada in the voting process and decision-making in reference to management change of Water and Sewer Public Services.

(3) Results of a preliminary study based on a questionnaire completed by a group of 5 members of the Water Institute (University of Granada).

First, we outline the design of the AHP applied to the case study and then we show and discuss the results.

4.1 Design of AHP for the case study

For the AHP design, we follow the first phase described in the previous section: 1) identification and design of decision making problem, i.e. the definition of the goal and criteria as well as developing alternatives, 2) performance of the hierarchical structure of the components involved in the process.

Firstly, in this case study the goal would be to choose the most appropriate form of management for urban water services in the city of Granada. Secondly, we should determine the criteria for making assessments.

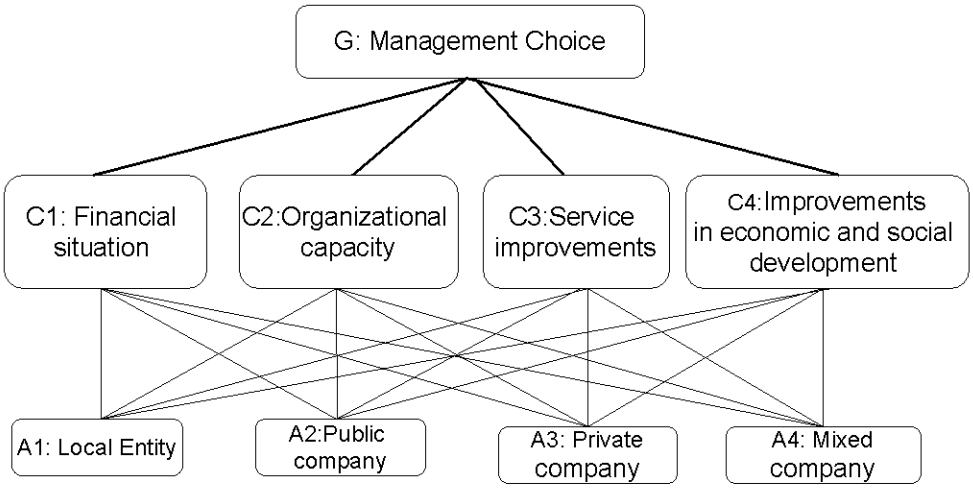
For this phase, we have used the information from technical reports prepared by special committees of experts to assist corporate members of the City Council in voting

processes and decision making. From this information, the following criteria can be determined. Criterion 1 (C_1): Financial situation, especially considering the lower water rates that do not involve a failure of economic and financial solvency of the management entity. Criterion 2 (C_2): Capacity of technical and economic organisation (use of economies of scale, capacity and flexibility in management, ability to undertake investments for improvement…etc.). Criterion 3 (C_3): Service improvements for citizens. Criterion 4 (C_4): Improvements in economic and social development of the municipality.

Thirdly, we must define the alternatives for the decision making process. According to the review in section 2, Spanish law establishes four options. We would present the AHP design as follows. Alternative 1 (A_1): Direct management through a Local (Public) Entity. Alternative 2 (A_2): Public company. Alternative 3 (A_3): Private company. Alternative 4 (A_4): Mixed public-private company.

After completing steps 1, 2 and 3, we would have clearly established the hierarchical structure of the decision making process (Figure 4.3).

Figure 4.3 Hierarchy for the study case of Granada



4.2 Process application and results presentation

Based on the information obtained or the perception of those involved in the process, the judgments for each pair of elements are introduced. The AHP begins with the first hierarchical level, where the relative importance of the criteria is compared in regard to the goal. Then the process continues with lower hierarchical levels. Similarly, judgments for each pair of elements are introduced in regard to the next highest level until the last level with the alternatives.

Hierarchical level 1: criteria assessment in regard to the goal

Following the description of the AHP considering information from the experts we obtain the first matrix (Table 4.2), as described in section 2.

Table 4.2 Matrix of criteria comparisons respect to the goal

Respect to GOAL	*C1*	*C2*	*C3*	*C4*
C1	1	3	6	7
C2	0.33333333	1	4	5
C3	0.16666667	0.25	1	3
C4	0.14285714	0.2	0.33333333	1

Now, we proceed to estimate the weights of relative importance or priorities of each criterion in regard to the goal. In order to do so, we will use the two methods described in the previous section. To estimate the priorities using the EM, formulas (2) and (3), we will rely on the Expert Choice 11.0 computer software, which can also be used to obtain the Consistency Index (CI), formula (4). Parallel to this, we estimate the priorities using GMM, formula (5), ascertaining the following results (Table 4.3). It is important to note that the results obtained by both methods are practically identical, which means that the matrix is very consistent.

Table 4.3 Priorities of criteria comparisons

	Priorities (EM)	***Priorities (GMM)***
C1: Financial situation	0.571	0.571
C2: Capacity of technical and economic organization	0.274	0.274
C3: Service improvements for citizens	0.102	0.101
C4: Improvements in economic and social development	0.054	0.053
Inconsistency	0.060	

Hierarchical level 2: alternative assessment in regard to the criteria

At this level, we carry out a pairwise comparison between the described alternatives in regard to each of the defined criteria. A total of N = 4 matrices are generated by pairwise comparison, coinciding with the number of criteria (Table 4.4).

Table 4.4 Comparison of alternatives in regard to criteria

Respect to C1	A1	A2	A3	A4	Priorities (w_i^1)
A1	1	0.33333	0.2	0.2	0.07039792
A2	3	1	0.5	0.5	0.19279266
A3	5	2	1	1	0.36840471
A4	5	2	1	1	0.36840471
Inconsistency					0.00157

Respect to C2	A1	A2	A3	A4	Priorities (w_i^2)
A1	1	0.33333	0.2	0.25	0.0715094
A2	3	1	0.33333	0.33333	0.15122397
A3	5	3	1	2	0.46578046
A4	4	3	0.5	1	0.31148617
Inconsistency					0.04

Respect to C3	A1	A2	A3	A4	Priorities (w_i^3)
A1	1	0.5	0.33333	0.2	0.084701
A2	2	1	1	0.33333	0.1791208
A3	3	1	1	0.25	0.18447357
A4	5	3	4	1	0.55170464
Inconsistency					0.02

Respect to C4	A1	A2	A3	A4	Priorities (w_i^4)
A1	1	1	3	1	0.29385743
A2	1	1	3	2	0.34945735
A3	0.33333	0.33333	1	0.25	0.09115505
A4	1	0.5	4	1	0.26553017
Inconsistency					0.04

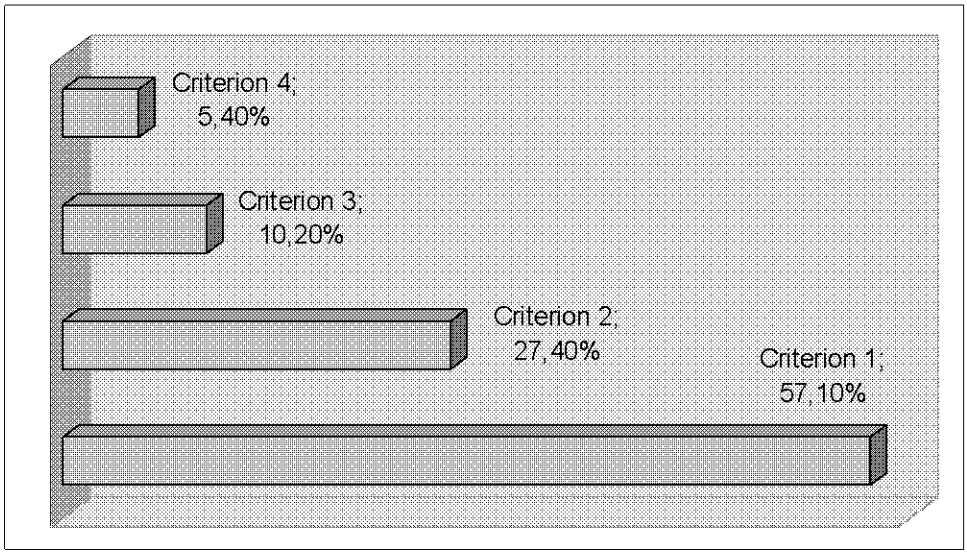
Finally, after obtaining the comparison matrices of alternatives with their associated priorities, we carry out the last step, the estimation of global priorities (Table 4.5), as shown in formula (8).

Table 4.5 Global priorities estimation

Global Priorities	**C1 (0.571)**	**C2 (0.274)**	**C3 (0.101)**	**C4 (0.053)**	Z_j
A1	0.07039792	0.0715094	0.084701	0.29385743	0.08405669
A2	0.19279266	0.15122397	0.1791208	0.34945735	0.188361865
A3	0.36840471	0.46578046	0.18447357	0.09115505	0.361667526
A4	0.36840471	0.31148617	0.55170464	0.26553017	0.36591392
Overall inconsistency					0.04

The first noteworthy result has to do with the assessment of the criteria. It is interesting to see that the financial situation (criterion 1) has the most relative importance, 57.10 % (Figure 4.4).

Figure 4.4 Relative importance of criteria



Source: Own elaboration

The previous aspect is interesting because, insofar as the financial situation determines the decision making process on how to manage urban water services, local governments will prefer the alternatives of full or partial privatisation of management. This issue is extensively referred to in previous research. The main factors taken into

account in local privatisation are essentially pragmatic (Bel & Fageda, 2007; 2009; González-Gómez & Guardiola, 2009; González-Gómez et al., 2010; Bel & Fageda, 2010), although even within these pragmatic reasons, financial constraints are seen as a decisive factor. The privatisation alternative, historically, has become a highly recurrent resource for city councils when their financial situation has not been favourable (González-Gómez et al., 2009; Ruiz-Villaverde et al, 2010).

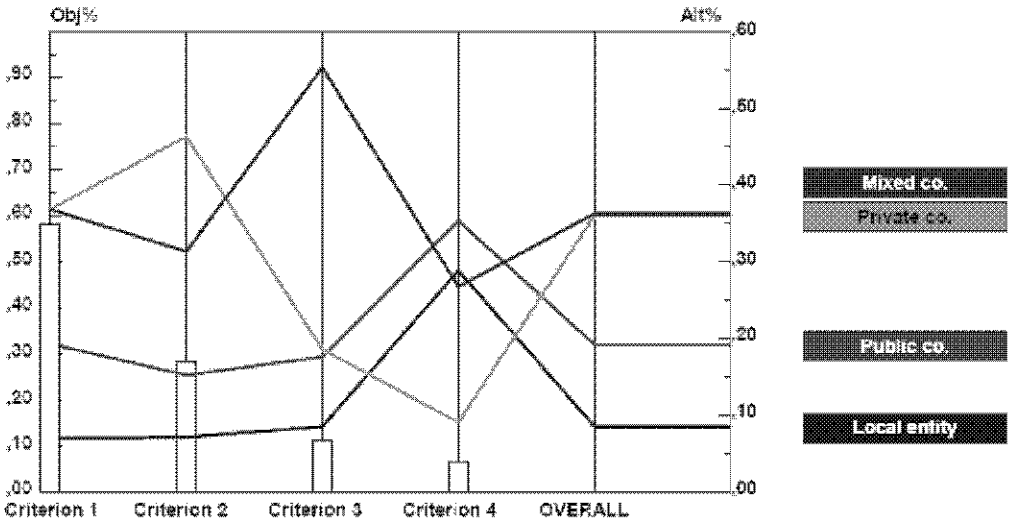
According to the minutes of the City Council of Granada plenary sessions (Record 24/96), the final decision was partial privatisation through a mixed public-private partnership. A total of 49 % of the shares of the municipal company (Emasagra S.A.) were sold to Aquagest[19]. In exchange, the management of the service was transferred for a period of 25 years. The shares were sold for a total of 241,366,461.12 euro. This amount partly allowed the city council to relieve the ailing situation of its accounts at that time.

The second noteworthy result is the striking equality between alternative 3 (private company) and alternative 4 (mixed company). According to the final result, a mixed company is slightly more appropriate than a private company (36.59% > 36.17%). We observe that private companies are slightly more preferred than mixed companies according to criterion 2 (Capacity of technical and economic organisation). However, regarding criterion 3 (Service improvements for citizens) and criterion 4 (Improvements in economic and social development), mixed companies provide a better assessment. Please note that criteria 3 and 4 have less relative importance according to the assessment in comparison with criterion 2, which is why the difference between the two alternatives in the overall result is hardly significant (see figure 5). In this vein, it is

[19] Aquagest belongs to the Agbar Group, a big holding which operates in all the fields related to community services: complete water cycle, among others.

worth mentioning that alternatives 1 (local entity) and 2 (public company) receive a favourable assessment with respect to criterion 4, even better than the score recorded by private and mixed companies; nevertheless, the same occurs as indicated previously, criterion 4 is less important than other criteria, affecting the overall results.

Figure 5 Performance sensitivity for nodes



Source: graph generated by Expert Choice 11.0 software

As regards overall priorities, we could establish the following order of preference, according to the results: A4 > A3 > A2 > A1. The fact that the decision made by the City Council of Granada in relation to urban water service management and the results obtained in this study coincide does not necessarily imply that a mixed company was the best alternative. Instead, we can conclude that, based on the information available at that time –legal and economic reports– the decision was consistent. That is to say, when a Local Government is experiencing serious financial problems such as the City Council of Granada in the 1990s or even at present, the alternative of complete or partial privatisation is seen as a necessary resource that provides a solution to such problems. However, it should be noted that this resource is only available every 25 years.

In any case, in regard to the comparison between the full and partial privatisation of urban water service management, it is worth highlighting that the mixed company alternative is playing a more leading role. This option allows taking advantage of the know-how of private management in day-to-day activities without the public partner having to relinquish its direct control of social interests. One advantage of this type of company has is lower transaction costs, in relation to reducing the cost of monitoring the performance of the private company. Spanish cities have opted for this type of management to a greater extent in recent years (Ruiz-Villaverde et al, 2010).

5. Concluding remarks

The tendency of population to concentrate in urban areas and new requirements demanded by citizens have forced local governments to take more and more decisions in a more complex environment. In these scenarios, policymakers should have tools to rationalise decision making in favour of citizens.

One important decision that local governments have to address, in those nations where the law provides, refers to the form of management urban water services should have. The difficulty of deciding is usually due to local governments having to consider several criteria simultaneously. In these cases, different multi-criteria analysis techniques can be useful when it comes to facilitating decisions.

In this chapter, we apply the AHP method to the case of Granada, a city in southern Spain. Through an ex-post analysis, we assess whether the decision in 1997 to sell part of the municipal water company's shares to a private company was a wise move. The study includes four criteria to consider based on information accessed from council minutes and technical reports compiled throughout the years of the decision making process.

The result is consistent with the literature that explains decisions made by municipal governments concerning how to manage local public services. A pragmatic reason, high local debt, is the determining factor in explaining the decision to incorporate a private partner into urban water service management. Partial privatisation, besides obtaining better leverage for the contribution of know-how, helps to alleviate the poor state of public finances.

Nevertheless, further research in this direction is undoubtedly required. It is advisable, therefore, to determine whether or not full or partial privatisation should be considered a source of funding for the municipality, regardless of whether the alternatives of a private or mixed company are more appropriate where the interests of the municipality are concerned. According to the results of this study, a public company is perceived as the most appropriate alternative for the social and economic interests of the municipality. However, when a city council faces serious financial difficulties, solving these problems is an objective that takes precedence over others; despite the fact that privatization involves delegating the service management for a minimum period of 25 years.

Finally, it should be noted that current public administration decisions are taken in increasingly complex scenarios. Therefore, having the advice of groups of experts and mathematical tools such as multi-criteria analysis can help to increase consistency and analytic rationality in decision making processes.

6. References

AEAS (2006) Encuesta sobre el Suministro de agua potable y saneamiento en España, [Survey on water supply and sanitation in Spain] Madrid (Spain): AEAS.

Antrop, M. (2004) Landscape change and the urbanization process in Europe. Landscape and Urban Planning, 67(1-4), 9–26

Barzilai, J. (1997) Deriving weights from pairwise comparison matrices. Journal of the Operational Research Society, 48(6), 1226-1232.

Barzilai, J., Cook, W.D. & Golany, B. (1987) Consistent weights for judgements matrices of the relative importance of alternatives. Operations Research Letters, 6(3), 131-134.

Bel, G., & Fageda, X. (2007). Why do local governments privatize public services? A survey of empirical studies. Local Government Studies, 33(4), 517-534.

Bel, G. & Fageda, X. (2009). Factors explaining local privatization: a meta-regression analysis. Public Choice, 139(1), 105-119.

Bel, G. & Fageda, X. (2010). Partial privatization in local services delivery: An empirical analysis on the choice of mixed firms. Local Government Studies, 36(1), 129-149.

Bryson, N. (1995). A goal programming method for generating priority vectors. Journal of the Operational Research Society, 46(4), 641-648.

Chen S.J. & Hwang C.L. (1992). Fuzzy multiple attribute decision making: methods and applications, New York: Springer.

Crawford G. & Williams, C. (1985) A note on the analysis of subjective judgement matrices. Journal of Mathematical Psychology 29(4), 387–405

Deng, H. (1999) Multicriteria analysis with fuzzy pairwise comparison. International Journal of Approximate Reasoning 21, 215–231

Fechner G. T. (1965). Elements of psychophysics, New York: Holt, Rinehart & Winston.

Fichtner, J. (1986) On deriving priority vectors from matrices of pairwise comparisons. Socio-Economic Planning Science, 20(2), 341-345.

Goldsmith, M. (1992). Local Government. Urban Studies, 29(3/4), 393-410

González-Gómez, F. & Guardiola, J. (2009). A duration model for the estimation of the contracting-out of urban water management in Southern Spain. Urban Affairs Review. 44(6), 886-906.

González-Gómez, F., Guardiola, J. & Ruiz-Villaverde, A. (2009) Reconsidering privatisation in the governance of water in Spain, Municipal Engineer, 162(3), 159-164.

González-Gómez, F., Picazo-Tadeo, A. J. & Guardiola, J. (2010) Why do local governments privatise the provision of water services? Empirical evidence from Spain, Public Administration. In press.

Guardiola, J., González-Gómez, F. & García-Rubio, M.A. (2010). Is time really important for research into contracting out public services in cities? Cities, 27(5), 369-376.

Hajkowicz, S. & Collins, K. (2007). A Review of Multiple Criteria Analysis for Water Resource Planning and Management, 21(9), 1553-1566

Holt, G. D. (1998). Which contractor selection methodology? International Journal of Project Management, 16(3), 153-164.

Laininen, P. y Hämäläinen, R.P. (2003), Analyzing AHP-matrices by regression. European Journal of Operational Research, 148(3), 514-524.

Ley 57/2003 de 16 de diciembre, de medidas para la modernización del gobierno local. Boletín Oficial del Estado, 16 de diciembre de 2003, núm. 301.

Ley 7/1985, de 2 de abril, de Bases del Régimen Local, Boletín Oficial del Estado, 3 de abril de 1985, núm. 80.

Martínez-Vázquez J. & Timofeev, A. (2009). A fiscal perspective of state rescaling. Cambridge Journal of Regions, Economy and Society, 2(1), 85–105.

Ménard, C. y S. Saussier (2000), Contractual choice and performance: The case of water supply in France, Revue d´Économie Industrielle, 92 (2/3), 385-404.

Miralles, A. (2009). A duration model analysis of privatization of municipal of water services. Revista de Economía Aplicada, XVII(50), 47-75.

Pérard, E. (2009). Water supply: Public or private? An approach based on cost of funds, transaction costs, efficiency and political costs. Policy and Society, 27(3), 193-219.

Romero C. & Rehman, T. (1987) Natural resource management and the use of multiple criteria decision making techniques: a review. European Review of Agricultural Economics 14(1), 61–89

Ruiz-Villaverde, A., García-Rubio, M.A. & González-Gómez, F. 2010. An analysis of urban water management in historical perspective: Evidence from the Spanish case. International Journal of Water Resources Development, 26(4), In Press.

Saaty, T.L. (1977). A scaling method for priorities in hierarchical structures. Journal of Mathematical Psychology, 15, 234-281.

Saaty, T.L. (1980) The Analytic Hierarchy Process, New York: McGraw Hill.

Saaty, T. L. (1990) How to make a decision: The Analytic Hierarchy Process.

Saaty, T.L. (1995) Decision Making for Leaders, Pittsburgh: RWS Publications.

Saaty, T. L. (2003) Decision-making with the AHP: Why is the principal eigenvector necessary, European Journal of Operational Research, 145(1), 85-91.

Simon, H. A. (1947) Administrative Behavior: A Study of Decision-Making Processes in Administrative Organizations, (4th ed.), New York: The Free Press.

Srdjevic, B. & Pinto-Medeiros, Y. D. (2008). Fuzzy AHP Assessment of Water Management Plans. Water Resources Management, 22(7), 877-894

Tong, R.M. & Bonissone, P.P. (1984) Linguistic solutions to fuzzy decision problems. TIMS/Studies in the Management Sciences, 20, 323–334.

Zimmermann, H-J (1987). Fuzzy sets decision making and expert systems. Boston: Kluwer.

CHAPTER 5

SUMMARY AND CONCLUSIONS

The main aim of this dissertation is to expand on the analysis on local governance by way of an economic and eminently empirical approach. More specifically, this research examines motivational and explanatory factors that influence the decision-making processes of local politicians regarding the public choice of urban water supply management. It pays special attention to the ideological and political side of decisions. Additionally, another important aim of this dissertation is to analyze the decision-making process involved in the partial privatization of urban water service management from a case study.

In order to achieve the aims of this dissertation, we have performed the following research activities: (1) we have conducted an extensive review of the literature (theoretical, historical and empirical) in the field of local governance and in particular in the field of urban water supply management. (2) We have performed several studies, one from a historical perspective and two empirical analyses. On the one hand, a multivariate econometric analysis has been conducted, namely a two-equation probit selection model applied to a database belonging to the Autonomous Region of Andalusia. On the other hand, a multi-criteria ex-post analysis has been performed and applied to a case study –the partial privatization of water services in the city of Granada in 1997.

The next section summarizes the main findings of this dissertation and some recommendations. Section 2 ends with some improvements and extensions that can be made to this dissertation.

1. Main findings and some recommendations

Chapter 1 analyzes the evolution of the governance of urban water supply in Spain since the second half of the 19th century. The first remarkable finding of this historical research is a trend based on alternation between public and private management of the service. The observed cyclical pattern is similar to other nations, although the trend in Spain lags behind to a certain extent.

In order to better explain this alternation, we must put the reasons for privatization and municipalization into context in each period of time. Private enterprise has been essential in times when the local government lacked the necessary technical, organizational and financial capacity to invest in the modernization of the service or infrastructure renewal. However, private management has presented certain drawbacks: scant interest in providing the service in less profitable areas of the country (especially in small municipalities), lack of investment in renovation and maintenance of the service and/or problems for city councils to control and supervise private companies by city councils. These shortfalls have led to reversion processes whereby the service management reclaimed by public administrations.

In order to answer the question raised in Chapter 1 (What can be learnt from the Spanish case?), the main strength of the Spanish model is the flexibility of the legislature. The organism responsible for the water service management, the municipality, has a wide variety of options to choose from. Such flexibility makes it possible for local governments to choose the form of management they consider most appropriate on the basis of the characteristics of each area of supply, as well as the sociological and political constraints at the time. However, it is true that, in practice, not all municipalities in Spain have the same options. Private enterprises are guided by

criteria of economic efficiency, so a private company may choose not to seek certain public tenders for privatization.

One of the major weaknesses of the Spanish model is the fragmentation and atomization of jurisdictions in relation to water supplies. The result is a confusing, inadequate and inefficient organizational structure. This complex and diffused structure makes it difficult to take coordinated decisions and dilutes responsibility across various levels of government. We believe it is interesting to recommend the creation of an administrative structure that defines a technical and legal order to clarify the current situation, the Ministry of the Environment and Rural and Marine Affairs probably being the most appropriate institution. In our opinion, the absence of an organism responsible for auditing and monitoring the situation of urban water supplies is also a weakness of the Spanish model. It is highly recommendable to have similar organisms to those existing in nearby countries, such as England and Wales –OFWAT–, the Netherlands –VEWIN– or Portugal –IRAR.

Finally, in Spain it is advisable to consolidate a change of approach in water management, beyond the vision focused on supply management that was inherited from the nineteenth century and based on the boom in water infrastructure; although in theory this situation is accepted, it is necessary to make a firmer commitment to demand policy management based on multidisciplinary approaches, in which economic analysis plays a more prominent role. Spain must adjust water quality to uses and the scale of facilities and infrastructure. Furthermore, citizen participation in water policy should be promoted and ensured.

In this line of research, based on the search for factors that explain the choice of the type of urban water supply management, Chapter 2 reviews the privatization rush in

the last quarter of the 20th century. According to related literature, the main reasons for these privatization processes were: the search for more efficiency, financial limitations of the municipalities and ideological and political motivations. However, some studies have shown, in relation to local privatization, problems related to the difficulties of introducing real competition into the industry, opposition to higher prices after privatization and the problem of incomplete contracts. All this may explain why the privatization trend has slowed significantly in Spain of late.

There are recent signs of a change in trend regarding decisions on the management formula for the urban water supply, largely conditioned by the scenario in recent years, i.e. an unfavourable economic situation and lack of financial resources of municipalities. These signs can be summarized in the search for different forms of partnership and cooperation.

On the one hand, Local Governments are increasingly opting for mixed companies. This allows the private sector to enter and make investments, while still allowing Local Governments to exert more direct control on service management, unlike the case of full privatization. On the other hand, a trend is emerging whereby particularly smaller municipalities are searching for new forms of cooperation to jointly manage the urban water supply. This makes it possible to take fuller advantage of the economies of scale in the industry and, ultimately, to reduce the average cost of providing the service.

Chapter 3 is a continuation of the line of research related to local privatization. This chapter presents new contributions; more specifically, new results are achieved through an empirical study on the motivating factors that influence the public choice of urban water supply management.

In our opinion the results of this research suggest some recommendations for future work in this field of research. In the first place, in order to capture the influence of ideological variables on local government management choices, it may not be enough to distinguish between left and right-wing parties. Instead, and information permitting, it would be preferable to introduce variables that represent the ideology of all political parties. The largest parties, normally those which dispute the centre of the political spectrum, tend to converge in many of their decisions, such that researchers are more likely to find differences in political decisions when the parties that are closer to ideological extremes are taken into account. Moreover, introducing other variables representing idiosyncratic features of the case being analyzed would be also desirable.

Additionally, insofar as it could improve the explanatory power of the models, including the value of the determinants of local government decisions at the time decisions are made, rather than at a later date, is also highly advisable, particularly in the case of variables subject to important changes over time.

Finally, Chapter 4 analyzes the decision on the urban water service management for a case study. For this purpose a mathematical optimization multi-criteria technique – the Analytic Hierarchy Process (AHP)– is used, which may help provide a better understanding of the criteria taken into account in the decision-making process. As far as we are aware, this would be the first time that MCA is applied to this decision-making process. This type of analysis can bring more consistency to the decisions taken in that matter.

The case study is the decision to partially privatize urban water service management in the City of Granada in 1997. The results show that the decision taken by the City Council at that time was consistent.

One of the main conclusions reached by this study refers to how the financial situation the City Council faces has a decisive influence on the decision-making process in local service management. The alternative of partial privatization of urban water service management is seen as a financial resource by the council. According to the results of this study, a public company is perceived as a more appropriate alternative for the social and economic interests of the municipality. However, when a city council faces serious financial difficulties, solving these problems is an objective that takes precedence over others, despite the fact that privatization involves delegating service management for a minimum of 25 years.

2. Improvements and extensions

The dynamics of public service contracting and regulation in Spain and the related privatization processes have been issues of great interest to scholars, researchers and politicians. Most research has focused on studying these processes at national level, resulting in a wide variety of books and high-level scientific publications. However, if we go back 5 years in time, we would see that the results of the research into local privatizations in Spain were far more modest and scientific publications were practically nonexistent. Today, this situation has changed. The variety and number of scientific publications addressing this issue has grown, but more can still be done in this direction.

In relation to Chapter 3, one way of extending this research could be to consider other study variables related to local privatization, such as what factors have influenced the renewal of concession contracts. Additionally, we could consider, for the case of Andalusia, analyzing factor influence in the partial privatization of urban water supply management. This encourages us to conduct in-depth research into the differences –

advantages and disadvantages– between private and mixed firms as forms of indirect management of local services.

Chapter 4 could be improved by using AHP method variations, such as the Fuzzy AHP or other variants of MCA methods. We could also try to introduce more criteria and sub-criteria that increase the complexity of decision-making assessment in urban water service management. In another vein, an interesting extension of this chapter would be to collect judgments from groups of experts from different areas of local governance, such as private sector, politicians and scholars. In this way, we could perform a comparative study of differences and similarities according to the perception of these different groups of experts.

We believe improving this new methodology opens up a new field of research that can be extended to more cases in both the present and the future. The aim would be to obtain results on key policy recommendations for local service management and even on technical advice to local politicians.