FACTORES EXPLICATIVOS DE LAS FORMAS DE GESTIÓN DE LOS SERVICIOS PÚBLICOS LOCALES Y SU INFLUENCIA EN EL ENDEUDAMIENTO MUNICIPAL Y EN EL COSTE DEL SERVICIO DE RECOGIDA DE RESIDUOS

EXPLANATORY FACTORS OF MANAGEMENT FORMS FOR LOCAL PUBLIC SERVICES AND THEIR INFLUENCE ON MUNICIPAL INDEBTEDNESS AND THE COST OF WASTE COLLECTION SERVICES

Tesis Doctoral presentada por Ana María Plata Díaz
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UNIVERSIDAD DE GRANADA

Facultad de Ciencias Económicas y Empresariales

Departamento de Economía Financiera y Contabilidad

TESIS DOCTORAL

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Granada, 2013

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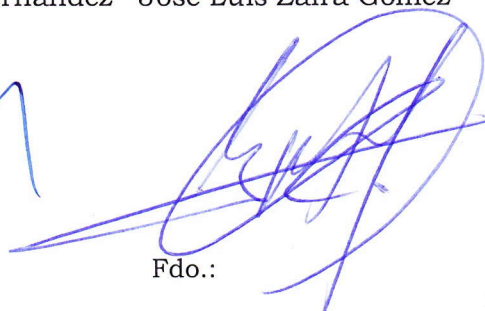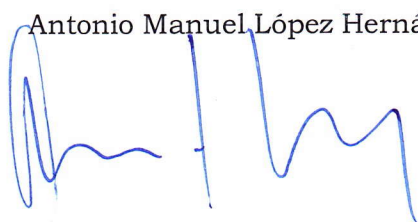Directores de la Tesis   Doctoranda

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Fdo.:   Fdo.:   Fdo.:

A mi familia y en especial a mis padres y a Roberto

This thesis is dedicated to my parents and my husband

AGRADECIMIENTOS

Me gustaría expresar mi agradecimiento mediante las siguientes palabras a todas aquellas personas que de una u otra forma han contribuido al desarrollo de esta tesis doctoral.

En primer lugar, agradecer a los miembros del tribunal su presencia en un día tan importante para mí. Es un gran honor contar con profesionales de tan reconocido prestigio.

De igual modo quisiese hacer patente mi más sincero agradecimiento a mis directores de tesis, D. Antonio M. López Hernández y D. José Luis Zafra Gómez, por darme la oportunidad de haber hecho posible este sueño. A D. José Luis me gustaría agradecerle su esfuerzo, apoyo incondicional, trabajo, paciencia y enorme generosidad al compartir tantos conocimientos e ideas que han resultado imprescindibles para el desarrollo de este trabajo y lo más importante, gracias por brindarme tu amistad. A D. Antonio Manuel agradecerle enormemente el haberme hecho formar parte de su grupo de investigación, gracias por darme esta oportunidad de formación invaluable, agradecerle su profesionalidad, comentarios, carácter entusiasta, correcciones, confianza y el todo el tiempo dedicado. Gracias a ambos por haber guiado mi trabajo de manera inmejorable durante estos años, espero poder seguir aprendiendo de vosotros.

Agradecer a D. Luis Enrique Pedauga Sánchez, su amistad, así como su amabilidad y generosidad al compartir conmigo su amplio conocimiento estadístico. Gracias por el tiempo y esfuerzo que has dedicado en enseñarme pacientemente tantas cosas.

A D. Danny Chow, me gustaría agradecerle su cálida acogida en la ciudad de Durham, su ayuda, paciencia y amabilidad, gracias por ser tan estupendo.

Por supuesto, a mis niñas "*las contapluses*" que desde el primer momento me brindaron su amistad y nos convertimos en confidentes. A Eva, agradecerle su enorme cariño, su forma de ver las cosas, su ánimo y alegría. A Laura le doy las gracias por estar tan pendiente de mí, como si de una hermana mayor se tratara y por darme siempre buenos consejos y orientaciones. A Gemma por ser tan buena compañera y amiga, sin ti el desarrollo de esta tesis doctoral no hubiese sido posible. A Raquel por los buenos momentos que hemos compartido en nuestro despacho, que lo han hecho todo más ameno.

Mis agradecimientos se hacen extensivos al Departamento de Economía Financiera y Contabilidad donde he encontrado excelentes profesionales y amigos. Desearía destacar mi especial consideración a Dña. Isabel Román Martínez que me animó a solicitar una beca de colaboración en el departamento, haciendo posible este trabajo de investigación y a D. David Ortiz Rodríguez que guió mis primeros pasos por el departamento y a quien he de agradecer su disposición a ayudarme siempre. Su extraordinaria valía profesional y humana ha significado y significa para mí, todo un ejemplo a seguir.

A Vera, Rodrigo, mis compañeros de los despachos D-06, D-08 y D-09 y, en especial, a mis compañeros de inglés del departamento, agradecerles los buenos ratos de charla en la cafetería, los ánimos infundados y todo el cariño que he recibido.

A mis amigos, porque sin ellos no hubiese sido lo mismo, para mí sois como mi familia, gracias por estar siempre ahí.

A mis padres que me lo han dado todo en la vida, ellos han sido siempre mi referente, mi punto de apoyo, gracias por vuestra comprensión, esfuerzo y enorme ayuda, gracias por darme la fuerza para salir adelante y, por favor, perdonad mis ausencias y el no haberos dedicado todo el tiempo que me hubiese gustado.

A Roberto, mi marido, le agradezco inmensamente su compresión y su positivismo, su apoyo para mí ha sido esencial, gracias por el ánimo que me brindas día a día para alcanzar nuevas metas, tanto personales como profesionales, gracias por cuidarme tanto y tan bien, te quiero muchísimo.

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ABSTRACT

The main aim of this thesis is to define and identify the factors explaining why public managers provide municipal services in different ways, and to analyse the influence of different forms of management on municipal debt and on the cost of waste collection services.

To do so, the thesis is structured into five chapters, after an initial introductory chapter, in the second chapter we shed light on which forms of management should be adopted by local administrations facing a situation of financial crisis and seeking an appropriate means to overcome it. We lay particular emphasis on the influence of fiscal stress on the adoption of diverse management alternatives, investigating and analysing formulas for public, private and intermunicipal cooperation. In this respect, a question of fundamental importance is that of predicting how fiscal stress will affect decisions to change or restructure the way in which public services are provided, toward the formulas advocated under New Public Management (NPM) to reduce costs and, therefore, alleviate fiscal stress. The results obtained in this chapter reveal that in times of fiscal crisis, municipalities opt for methods such as outsourcing and inter-municipal cooperation, which ratifies one of the major assumptions of NPM, but only as regards the application of techniques based on the business environment. Agencification and public firms are the options least often adopted in situations of fiscal stress, which is in accordance with Post-NPM postulates, under which excessive numbers of agencies and public companies increase the cost of administration.

In the third chapter, we wish to determine which organisational and management structures result in these administrations presenting a given level of borrowing, because on some occasions instrumental agencies have been created in order to transfer debt from the local

authority to another type of organisation, and so this debt no longer appears on the accounts of the local administration, which enables it to avoid borrowing restrictions. These are known as "off budget" operations. The results obtained indicate that outsourcing and inter-municipal cooperation forms are inversely related to municipal borrowing, thus we find evidence of the use of these types of management formulas to transfer debt from the municipal budget to other entities.

In the fourth chapter, we seeks to identify which management formulas produce the greatest cost savings and improvements in quality, for the particular case of the waste collection service, which is one of the most complex and costly services that Spanish local authorities are obliged to provide. The results obtained show that the forms of public management in which services are provided directly by the local authority or through a shared approach, especially inter-municipal cooperation, obtain lower average service costs. Evidence has also been obtained that increasing service quality provokes increased costs, and that municipalities governed by an absolute majority have lower service costs than do those governed by a coalition.

Finally, the fifth chapter of this thesis presents the most important conclusions drawn and proposes some future areas of investigation.

CHAPTER 1: INTRODUCTION

1. INTRODUCTION

In recent decades, there has been growing interest in evaluating the activities of the local public sector, and one of the main lines of research currently being addressed is that of the design and development of indicators to measure how these entities manage their resources and their finances (Kloha et al., 2005a, 2005b; Dollery et al., 2006; Carmeli, 2008; Zafra et al., 2009a, 2009b, 2009c, 2011). Among the reasons for this heightened interest in local administration is because it is at this level of administration where most direct contact with the population takes place, where a large number of functions are implemented and to which many competences have been transferred from other administrations. These factors have contributed to increasing their costs and to the need to obtain new sources of finance. Financial resources have been affected by the current economic and financial crisis, by problems of the public-sector deficit, by the financial restrictions arising from the new framework for local finance and, particularly, by the limitations imposed on borrowing (López-Hernández et al., 2012). In this context, it is all the more necessary to continue the debate as to whether there exist one or more specific ways by which the cost of managing public services may be reduced, thereby alleviating the problems of fiscal stress facing these administrations.

In this respect, diverse theoretical approaches have been proposed. These include Weber's theory, the theory of public choice, the latter's expression in now-traditional models such as New Public Management (NPM), and more recent models such as Post-New Public Management (Christensen and Lægreid, 2008) or Neo-Weberian Administration (Kuhlmann, 2010). Among other aspects, studies have sought to determine which forms of management achieve the highest levels of efficiency, in order to detect and avoid situations of inefficiency

and waste, and at the same time improve the quantity and quality of the results offered to society (Lovell and Muñiz, 2003).

These theoretical approaches are characterised by the ongoing revision of management structures and by continual proposals for new models and instruments for the management of public administrations, which have produced an administrative reform process that has been uninterrupted since the 1980s. During this period, practices have evolved from Traditional Public Management (TPM) to NPM, the tenets of which have been reviewed in the light of the results obtained. Thus, in contrast to TPM, based on Weber's theory and characterised by the application of the principle of legality and by the establishment of a bureaucratic administration aimed at achieving efficiency and rationality in the implementation of procedures, NPM proposed the introduction of management techniques and procedures borrowed from the private sector, thus introducing output (result)-oriented management in which the citizen was viewed as a client (Hood, 1991, 1995; Pollitt, 1995, 2009).

In contrast to the bureaucratic structure of the traditional model, according to which large bureaucracies enjoy economies of scale, which facilitate efficiency, and coordinate service provision by different entities, NPM proposes that the management of public administrations should be improved through changes in their organisational structure, creating areas that are more flexible, less hierarchic and in which decision-taking is delegated, by means of decentralised bodies and agencies, or through the application of formulas derived from the private sector, i.e. outsourcing (Diefenbach, 2009). One of the principal ideas on which NPM is based is that public entities should be operated and organised in the same way as private organisations (Dunleavy and Hood, 1994), because the latter produce and provide services more efficiently (Christensen and Lægreid, 2011). Various authors, including those mentioned above, believe that NPM is actually a compendium of

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various theories derived from different disciplines, such as economics, politics and organisation theory (Public Choice, Neo-Liberalism, Managerialism, Transaction Cost or Agency Theory, among others), and has received contributions from all of them regarding the restructuring of service provision by public bodies in order to increase efficiency.

Among the economic factors identified as crucial to the use of NPM are those of cost savings and the presence of fiscal stress (Bel and Fageda, 2007). The goal of achieving cost savings is one of the principal reasons for local authorities to introduce market mechanisms, mainly through processes of outsourcing. This is because external agents create more flexible structures, they face fewer restrictions than do public bodies, they can share fixed costs among different geographic units, and they can introduce innovations to produce savings (Donahue, 1989; Kleven et al., 2000; Stark, 2002; Bel and Fageda, 2006; Bel and Warner, 2008).

The other economic factor highlighted in previous studies as fundamental to the adoption of NPM is that of fiscal stress. In this respect, Hood (1995:102) observed that NPM is frequently interpreted as a response to fiscal stress and to resistance to additional taxation, indicating, moreover, that local governments with the poorest indicators for borrowing and deficit would be most likely to implement NPM policies, because when an authority has financial difficulties and takes the political decision not to increase taxes or to apply cost reduction measures, one of the few alternatives remaining is to make drastic changes in its organisational structure (Bel and Fageda, 2007; Christoffersen and Larsen, 2007; Zafra-Gómez and Muñiz, 2010).

Another group of factors associated with the implementation of NPM concerns the political characteristics of municipal managers, as the application of NPM involves accepting a political doctrine close to that of neoliberalism. This strain of economic thought arose in the

1980s and 1990s, seeking to shrink the public sector and tilt the balance toward the private sector, transferring the latter's ideas on structure and function to the area of public management (Light, 1999; Zullo, 2009). Therefore, according to Pallensen (2011), politicians whose ideology contains characteristics related to neoliberalism will be more likely to implement policies based on NPM.

The environment in which local authorities provide services is another factor that has been considered influential in the introduction of policies based on NPM. Population variations, together with certain socioeconomic characteristics, may influence the use of particular forms of management under the aegis of NPM (Zullo, 2009; Bel and Mur, 2009).

Accordingly, the above-considered factors facilitate the change or restructuring of public service provision toward the formulas proposed under NPM. Nevertheless, in regard to the options posed by NPM for the restructuring of service provision, such as decentralisation, agencification and outsourcing, some local authorities have encountered difficulties in their practical implementation, due mainly to their limited size (Bel and Fageda, 2006; Mohr et al., 2010). As regards decentralisation and the creation of public agencies, not all authorities are large enough to undertake such policies (Hood, 1995), while outsourcing, in the case of small authorities, would not offer the private operator sufficient profit, thus reducing the appeal of the operation (Bel and Fageda, 2006; Warner, 2006). For this reason, some authorities have chosen to design systems for inter-municipal cooperation, seeking to create a larger organisation and obtain economies of scale, greater efficiency and coordination in the provision of public services, thus lowering costs and alleviating levels of fiscal stress (Boyne, 1996).

However, in recent years criticisms have been made of the adoption of formulas based on NPM, citing problems of coordination

and control among the different agencies created, leading to the occurrence of overlapping functions among public companies, agencies and organisations, thus raising costs and reducing efficiency in the public sector, and eroding responsibility (Rhodes, 1996; Diefenbach, 2009). On the basis of these arguments, the postulates of Post-NPM (Christensen and Lægreid, 2008) or Neo-Weberian Administration (Pollitt, 2009; Kuhlmann, 2010) have increasingly been incorporated in the adoption of mechanisms for the re-centralisation and reorganisation of public administrations, as a means of overcoming the above-mentioned problems.

In view of this situation, the analysis of forms of management that might enable local administrations to achieve greater cost savings and reduced fiscal stress has come to be of fundamental importance and constitutes one of the main goals of the present research.

The aim of this thesis, structured in three principal chapters (see Figure 1 illustrating this structure and setting out the theoretical models used) is to shed light on which forms of management should be adopted by local administrations facing a situation of financial crisis and seeking an appropriate means to overcome it. This study lays particular emphasis on the influence of fiscal stress on the adoption of diverse management alternatives, investigating and analysing formulas for public, private and intermunicipal cooperation.

In this respect, a question of fundamental importance is that of predicting how fiscal stress will affect decisions to change or restructure the way in which public services are provided, toward the formulas advocated under NPM to reduce costs and, therefore, alleviate fiscal stress. A further objective is to identify which management formulas produce the greatest cost savings and improvements in quality, for the particular case of the waste collection service, which is one of the most

complex and costly services that Spanish local authorities are obliged to provide.

In addition, we wish to determine which organisational and management structures result in these administrations presenting a given level of borrowing, because on some occasions instrumental agencies have been created in order to transfer debt from the local authority to another type of organisation, and so this debt no longer appears on the accounts of the local administration, which enables it to avoid borrowing restrictions. These are known as "off budget" operations.

Figure 1. Structure of the Doctoral Thesis

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  ┌──────────────┐    NPM      ╭────────────────────╮
  │ FISCAL       │───────────▶ │   MANAGEMENT       │
  │ STRESS       │  Chapter 2  │   SERVICE FORMS    │
  └──────────────┘             ╰────────────────────╯
  Off Budgets Operations            │           │
                          Chapter 3 │           │ Chapter 4    NPM
                                    ▼           ▼
  ┌──────────────────┐      ┌──────────────────────────┐
  │  INDEBTEDNESS    │      │   COST OF WASTE          │
  │                  │      │   COLLECTION SERVIVES    │
  └──────────────────┘      └──────────────────────────┘
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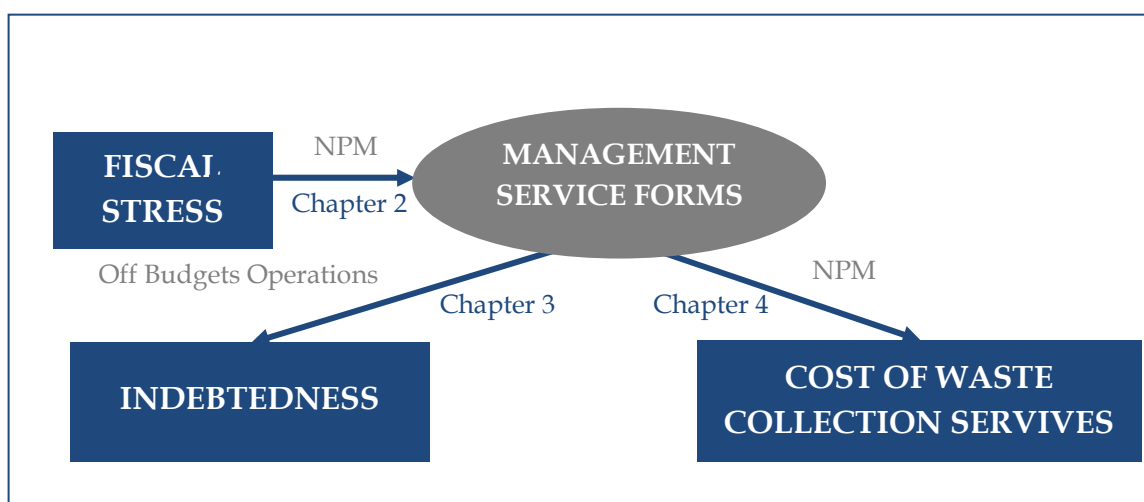
It is important to know when a city is facing a situation of fiscal stress. Therefore, Chapter 2 of this thesis (as an article, accepted by *Revista Española de Financiación y Contabilidad*-the Spanish Journal of Finance and Accounting- with an impact factor in 2012 of 0.106 in the ISI Web of Knowledge: Thomson-Reuters) presents a model for measuring the fiscal stress of local administrations by means of the concept of financial condition, setting out a broad range of indicators with which to monitor and diagnose local finances, and thus enable decisions to be taken aimed at reducing fiscal stress.

However, the concept of financial condition is not a magnitude that is directly observable, and so there is no straightforward means by which it can be measured. Therefore, various authors have attempted to define and develop this concept, proposing different alternatives for measuring it.

According to Berne and Schramm (1986), to correctly assess financial condition it is necessary to consider a series of magnitudes concerning the situation, related to society's needs and preferences, local conditions that affect the provision of public services, the cost of productive factors, the resources available to society and public policies that affect the local entity. Clearly then, financial condition is a complex magnitude, one incorporating both financial and non-financial factors, and having both short and long-term consequences.

In the same line, Hammer and Green (1996) considered that the fiscal needs of cities and their geographic limitations determined the economic development of policies and activities; in other words, there exist demographic, socio-economic and fiscal conditions that influence the provision of services by local authorities. Accordingly, socio-economic variables are taken into consideration in measuring the financial health of local authorities in order to evaluate their citizens' preferences and needs (Boyne, 1996). In this sense, various studies have been conducted to evaluate the influence of environmental factors on spending policies (in the United Kingdom, see Barnett et al., 1992), on the organisation's financial situation (Leone, 1976; Petersen, 1977; Berne, 1992) or on an indicator structure, such as the Comprehensive Performance Assessment that has been proposed in the United Kingdom (Andrews et al., 2005; Andrews et al., 2006).

The above-mentioned studies highlight the need to explore or model the relations between municipal activity and the social, economic and demographic surroundings that characterise the demand for public

services. Accordingly, the concept of financial condition has evolved to include financial, environmental and organisational factors. Environmental factors are considered to affect both the generation of demand and the provision of public services. Financial factors, on the other hand, reflect the financial health of municipal finances, while organisational factors referred to the authority's capacity to adapt to changes in its surroundings (Zafra-Gómez et al., 2006).

In consequence, an appropriate measure of financial condition should take into account the elements that measure short-term solvency, budgetary solvency –with special emphasis on sustainability, flexibility and financial independence– and any external factors that may influence the provision of local public services (Andrews et al., 2005; Lindblad, 2006). Specifically, such a set of indicators would provide the best possible instrument for assessing and communicating the socio-economic situation and the quality of life in the municipality, enabling the authorities to obtain a comprehensive view of the diverse elements that constitute the local financial condition and the impact of each of these elements on the probability of changes being made to introduce NPM policies.

In this sense, it seems evident that a worsening financial condition will be reflected by changes in a local government's fiscal policies and in the strategies it pursues, together with changes in its organisational structure (Hendrick, 2011). Levine (1978) listed a series of options that may be adopted in order to overcome problems of fiscal stress, ranked in terms of the phase or degree of stress affecting the municipality. In an initial phase, *delaying,* tactics would be employed in which the authorities denied the gravity of the entity's fiscal problems, in the hope that they would be merely temporary. In the second phase, *stretching and resisting* tactics would be deployed, seeking to achieve more with the same quantity of resources, thus avoiding visible spending cuts and tax increases. The next phase would be that of

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cutting and smoothing, in which tactics would be employed to limit and directly counteract the effects of severe fiscal stress. The final phase, *extreme survival,* would consist in applying radical means to enable the entity to function at a minimal level. Among these phases, it is in the second one, *stretching and resisting,* where Levine (1978, 1980) proposes the option of changing the way in which public services are managed, through the adoption of outsourcing and collaboration processes to overcome problems of fiscal stress.

There are other ways in which local authorities can address such a situation, for example by creating public companies or agencies (Hood, 1995) or through inter-municipal cooperation (Warner, 2006), that is, by means of NPM measures. In this respect, it is of fundamental importance to foresee the actions that local authorities may exercise in response to situations of fiscal stress.

Therefore, in the second chapter of this thesis, we examine 1572 Spanish municipalities, sampled over an extensive time horizon (2002-2009), using a random-effect panel data multinomial logit model, in order to predict which forms of management are adopted by municipalities when they are faced with fiscal stress, deploying not only measures such as legal restrictions on borrowing, the concept of financial load and the size of financial transfers from central to local government, but also measures of short-term solvency, borrowing and budgetary deficit. In other words, we have implemented the concept of financial condition, as developed by Groves et al. (2003 and adapted to the Spanish context in the studies by Zafra-Gómez et al. (2006, 2009a, 2009b, 2009c).

With respect to the relation between financial condition and NPM, special emphasis should be laid on one of its elements, namely the concept of flexibility or level of borrowing, a financial resource that requires greater supervision by higher-ranking public authorities, which

set limits on access to this resource. The special emphasis required on the behaviour of this variable and its relation with management forms for public services is due to the fact that local authorities might employ NPM instruments to transfer part of their debt to the entities created in accordance with this theory. This aspect of our analysis is addressed in Chapter 3, and in turn forms part of the article accepted in *Gestión y Política Pública* (Management and Public Policy), which in 2012 had an impact factor of 0.100 in the ISI Web of Knowledge (Thomson-Reuters).

The situation and evolution of public borrowing is a permanent cause for concern among politicians and managers. The behaviour of this variable has been the focus of numerous studies (Escudero, 2002; Benito-López and Bastida, 2005; Mora and Montesinos, 2007; Benito-López et al., 2009; Guillamón et al., 2011; Brusca et al., 2012), because on many occasions, and for diverse levels of public administration, it has presented a very evident tendency to increase. This situation, together with the importance of budgetary stability and financial sustainability in the context of local government, makes it necessary to better understand instruments and methodologies with which to evaluate these governments' degree of success in managing their resources, in order to detect and prevent, as far as possible, excessive borrowing, and thus a worsening of their financial health.

In this context, and considering the borrowing constraints to which local governments are subjected, we studied this indicator of financial condition to determine whether the creation of agencies, public companies and consortia, and the outsourcing of public services, together with political aspects and internal financial situation of the entity, are factors that result in the council incurring a certain level of debt. One of the mechanisms by which public managers may circumvent debt controls and regulatory limits is the use of the NPM tool known as off-budget operations, such that increases in municipal debt are imputed to instrumental bodies, thus improving municipal

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financial health by removing certain debt items from the municipal budget.

In the introduction to this thesis, we identified a problem that called for further analysis: the relationship between fiscal stress and the adoption of NPM formulas. The point is that alternative methods implemented within the framework of NPM should result in cost savings. It is precisely this argument –cost savings– which underpins the development of the fourth chapter of this thesis (article published in "Public Administration", a journal with an impact factor of 1.062 in 2012 in the ISI Web of Knowledge (Thomson-Reuters).

In this chapter, we determine whether the management approach adopted by public managers as the most appropriate for the provision of public services actually achieves lower costs. In the context of the current economic crisis, it is more necessary than ever to obtain evidence on this issue, and thus determine the optimal size for the provision of local public services, with special emphasis on management forms that will make it possible to reduce the costs of services (Andrews and Boyne, 2009; Peters, 2011).

Let us recall, however, that in every productive process it is essential to be aware of the quality of services provided. In this sense, Montesinos and Brusca (2009) observed that the main reasons for the implementation of public management reforms are to achieve a more rational use of resources, higher quality and better management of the environment. Moreover, as indicated by Pollitt and Bouckaert (2000), quality is an essential goal for public managers, representing a vital element in achieving a new form of administration, one capable of responding to the challenges arising from the transformation of society, and capable of responding to society's demands, placing these questions at the heart of the decision-making process. According to Morgan et al. (1981), Stein (1990) and Boyne (1998), the introduction of

a private operator into the management of local public services involves not only the possible reduction in costs, but also public managers' ambitions to improve service quality, especially in smaller municipalities. However, the evidence in this respect is unclear; authors such as Hart et al. (1997) have noted that private operators are only interested in reducing costs, and that this is achieved by reducing the quality of the services provided. Other studies of this question have reported conflicting conclusions (Boyne and Walker, 2002).

But quality and the management form adopted for service provision are not the only factors that can influence the cost of the service evaluated; external socio-economic and political factors may also influence the provision of local public services.

However, due to the great number of services provided by local authorities, in this chapter of the thesis we focus solely on the provision of waste collection services; this is one of the most complex and expensive of the basic services that municipalities are required to provide, and therefore one of the most commonly studied (Bosch et al., 2000; Termes-Rife and Alerm-Domenech, 2007; Bel et al., 2010; Benito-López et al., 2011; Rogge and De Jaeger, 2012; Jacobsen et al., 2013, among others). Thus, we evaluate the cost of the public waste disposal service taking into account the influence of the socioeconomic and political environment. The value of the measurement obtained is that it will enable us to identify the form of management – individual or joint, public or private – that produces optimal levels of quality and cost in providing this service. Thus, we shall obtain significant information about the management formulas being developed by local authorities with similar characteristics in order to achieve more efficient public policies.

Accordingly, three hypotheses are addressed: in the first, our aim is to test the impact of potential economies of scale on costs, by

comparing the individual and joint provision of the public service. In the second hypothesis, we examine whether there are differences in service costs according to whether public or private management forms are adopted. Finally, the third hypothesis is designed to assess the impact of service quality levels on costs. However, unlike previous studies, in testing the hypotheses, we applied the methodology proposed by Plumper and Troeger (2007), which enables the analysis of panel data for a broad time horizon -in our case, up to the onset of the present global financial and economic crisis-. In addition, we considered six ways in which this local public service can be managed, among the various public/private, individual and joint formulas. Therefore, the results obtained can be used to justify the use of specific management options aimed at reducing costs, and municipal administrations can be better equipped to address the economic and financial problems that may arise.

Finally, the fifth chapter of this thesis presents the most important conclusions drawn from the various lines of research presented, and proposes some future areas of investigation.

2. INTRODUCCIÓN

En las últimas décadas, se ha puesto de manifiesto una mayor preocupación por la evaluación de las actividades del sector público local, siendo una de las principales líneas de investigación que está siendo abordada en la actualidad el diseño y desarrollo de indicadores capaces de medir cómo estas entidades gestionan sus recursos y sus finanzas (Kloha et al., 2005a, 2005b; Dollery et al., 2006; Carmeli, 2008; Zafra et al., 2009a, 2009b, 2009c, 2011). Este renovado interés por las administraciones locales encuentra su justificación en que éstas constituyen el nivel de la administración que mantiene un contacto más directo con la ciudadanía, acumulan un gran número de funciones y han asumido competencias de otras administraciones. Todo ello ha conducido a un incremento en el gasto y a una búsqueda de mayores recursos para su financiación. Estos recursos, se han visto afectados por la actual crisis económica y financiera, por los problemas de déficit público, por las restricciones financieras derivadas del nuevo marco sobre financiación local, siendo especialmente importantes las limitaciones del recurso al endeudamiento (López-Hernández et al., 2012). En este contexto, se hace aún más necesario continuar el debate sobre si existen alguna o algunas formas específicas de gestionar los servicios públicos que permitan disminuir el coste de los mismos y, por tanto, aliviar los problemas de fiscal stress a los que se enfrentan estas administraciones.

En este sentido, diferentes enfoques teóricos han aparecido en la literatura con la intención de avanzar en el debate planteado anteriormente. Desde la teoría weberiana, pasando por la teoría de la elección pública (*Public Choice*), y su plasmación en modelos ya tradicionales de gestión pública, como la Nueva Gestión Pública (NGP) o *New Public Management* –NPM–, hasta modelos más recientes como el

Post-New Public Management –Post-NPM– (Christensen y Lægreid, 2008), o *Neo-Weberian Administration* (Kuhlmann, 2010). Se han pretendido determinar, entre otros aspectos, qué formas de gestión conducen a alcanzar mayores niveles de eficiencia, con objeto de detectar y evitar actuaciones ineficientes y de despilfarro, al tiempo que se mejora la cantidad y calidad de los resultados ofrecidos a la sociedad (Lovell y Muñiz, 2003).

Así, estos enfoques teóricos han estado caracterizados por la continua revisión de la estructura y la incesante propuesta de nuevos modelos e instrumentos para la gestión de las administraciones públicas, lo que ha propiciado un proceso de reforma de estas administraciones que no ha cesado desde la década de los 80 del siglo XX. En este periodo, se ha pasado de la denominada Gestión Pública Tradicional –GPT– a la conocida como NGP, cuyos planteamientos están siendo revisados a la vista de los resultados obtenidos. Así que, frente a la GPT, basada en la teoría weberiana y caracterizada por la aplicación del principio de legalidad y el establecimiento de una administración burocrática encaminada a la consecución de la eficiencia y la racionalidad en la resolución de procedimientos, la NGP propuso la introducción de técnicas y procedimientos de gestión del sector privado en la administración pública, implantando la orientación al *output* (resultado) y al ciudadano como cliente (Hood, 1991, 1995; Pollitt, 1995, 2009).

En contraposición a la estructura burocrática del modelo tradicional, que consideraba que en las grandes burocracias las economías de escala favorecerían la eficiencia y la coordinación de las entidades en la provisión de servicios, la NGP propone mejorar la gestión de las administraciones públicas mediante cambios en la estructura organizacional, creando organismos que sean más flexibles, menos jerárquicos y en los que se delegue la toma de decisiones, tales como la creación de entes descentralizados y agencias o mediante la

aplicación de fórmulas derivadas del sector privado –externalización de servicios– (Diefenbach, 2009). Así pues, una de las ideas principales en la que se basada la NGP es que las entidades públicas operen y se organicen como las organizaciones privadas (Dunleavy y Hood, 1994) debido a que éstas consiguen producir servicios de forma más eficiente (Christensen y Lægreid, 2011). A este respecto, diversos autores, como los ya mencionados anteriormente, consideran que la NGP es un compendio de varias teorías provenientes de diferentes ámbitos de disciplinas como la economía, la política y de la teoría de la organización (*Public Choice, Neo-liberalism, managereliams, transactions costs* o *agency theory*, entre otras) que se nutre de aportaciones de todas ellas a la hora de reestructurar la provisión de servicios públicos para aumentar la eficiencia.

Entre los factores económicos que se señalan en la literatura como determinantes del uso de formas de gestión de la NGP, destacan: el ahorro en costes y la presencia de problemas de *fiscal stress* (Bel y Fageda, 2007). El ahorro en costes constituye una de las principales motivaciones de los ayuntamientos para la introducción de mecanismos de mercado, principalmente a través de procesos de externalización de servicios. Esto es debido a que los agentes externos son capaces de tener estructuras más flexibles, presentan menos restricciones que los productores públicos, pueden compartir costes fijos entre diferentes unidades geográficas y pueden introducir diferentes innovaciones para producir ese ahorro (Donahue, 1989; Kleven et al., 2000; Stark, 2002; Bel y Fageda, 2006; Bel y Warner, 2008).

Del mismo modo, el otro factor económico indicado por la literatura como determinante en la adopción de formas de gestión de la NGP es el *fiscal stress*. En este sentido, Hood (1995: 102) señaló: "la NGP se interpreta, frecuentemente, como una respuesta al *fiscal stress* y a la resistencia a impuestos adicionales", indicando que los gobiernos locales con peores indicadores de endeudamiento y de déficit serán más

proclives a implementar políticas de la NGP, ya que cuando un municipio se enfrenta a dificultades financieras y toma la decisión política de no aumentar impuestos ni aplicar medidas de disminución de los gastos, una de las pocas alternativas que le queda es introducir cambios drásticos en su estructura organizativa (Bel y Fageda, 2007; Christoffersen y Larsen, 2007; Zafra-Gómez y Muñiz, 2010).

Otro grupo de factores asociados a la implementación de la NGP son las características políticas de los gestores municipales, puesto que ésta asume doctrinas políticas cercanas al neoliberalimo. El neoliberalismo surge en las décadas de los 80 y de los 90 con la intención de reducir el sector público en favor del sector privado, trasladándose sus ideas sobre la estructura y funcionamiento al ámbito de la gestión pública (Light, 1999; Zullo, 2009). Por tanto, según Pallensen (2011), aquellos políticos en los que dentro de su ideología se encuentren características relacionadas con el neoliberalismo, tendrán una mayor probabilidad de implementar políticas basadas en la NGP.

El entorno donde los municipios prestan sus servicios es otro factor analizado en la literatura como influyente en la implantación de políticas basadas en la NGP. Las variaciones de la población así como ciertas características socioeconómicas pueden condicionar el uso de formas de gestión bajo el paraguas de la NGP (Zullo, 2009; Bel y Mur, 2009).

Por consiguiente, los factores considerados anteriormente, propician el cambio o reestructuración de las formas de prestación de los servicios públicos hacia fórmulas que contempla la NGP. No obstante, frente a la opciones planteadas por la NGP –descentralización, agencificación y externalización– para la reestructuración de los servicios, nos encontramos con que algunos ayuntamientos tienen ciertas dificultades para llevar a cabo tales acciones, debido principalmente a su reducido tamaño (Bel y Fageda, 2006; Mohr et al.,

2010). En relación con la descentralización y la creación de agencias públicas, porque los ayuntamientos no presentan el tamaño necesario para emprender la creación de las mismas (Hood, 1995), mientras que la externalización, al presentar un reducido tamaño no permite obtener suficientes ganancias al operador privado, por lo que reduce el atractivo de la operación (Bel y Fageda, 2006; Warner, 2006). Por este motivo, los ayuntamientos optan por llevar acciones de cooperación intermunicipal. La intención es crear una organización de mayor tamaño, que permita producir economías de escala, obtener una mayor eficiencia y coordinación en la provisión de servicios públicos, menores niveles de coste y por tanto, mejorar los niveles de *fiscal stress* de los municipios (Boyne, 1996).

Sin embargo, durante los últimos años, han surgido determinadas críticas en la adopción de fórmulas basadas en la NGP, debido a que se están empezando a registrar problemas de coordinación y control entre los diferentes entes creados, produciéndose duplicidades entre las diferentes agencias, organismos y empresas públicas, lo que está produciendo un aumento de los costes y una pérdida de eficiencia en el sector público, lo que conlleva a una erosión de la responsabilidad (Rhodes, 1996; Diefenbach, 2009). Estos argumentos han llevado a que los postulados de la denominada *Post-NPM* (Christensen y Lægreid, 2008) o *Neo-Weberian Administration* (Pollitt, 2009; Kulhmann, 2010) estén tomándose en cuenta para la adopción de mecanismos de recentralización y reorganización de las administraciones públicas, buscando eliminar estos problemas.

Ante esta situación, analizar qué formas de gestión permiten a las administraciones locales alcanzar un mayor ahorro en costes y una reducción del fiscal stress, se convierte en un aspecto fundamental y en uno de los principales objetivos a alcanzar en este trabajo de investigación.

De modo que, con el desarrollo de esta tesis doctoral, estructurada en tres capítulos principales (Véase figura 1 para una mayor comprensión sobre la estructura de la misma y sobre los modelos teóricos utilizados), pretendemos aportar alguna luz sobre qué formas de gestión deberían adoptar las administraciones locales que se enfrentan a una situación de crisis financiera y buscan una salida a la misma. Para ello, hemos profundizado en el estudio de la influencia del *fiscal stress* sobre la adopción de diversas alternativas de gestión donde se recogen fórmulas de producción públicas, privadas y de cooperación intermunicipal.

En este sentido, es fundamental predecir cómo afecta el *fiscal stress* en las decisiones de cambio o reestructuración de las formas de prestación de los servicios públicos hacia aquellas fórmulas contempladas por la NGP para generar una mayor reducción de los costes y, por tanto, un alivio del *fiscal stress*. Asimismo, se pretende de éstas identificar cuáles son las que producen un mayor ahorro en costes y una mejora en la calidad, para el caso particular del servicio de recogida de residuos, uno de los servicios más complejos y costosos que los ayuntamientos españoles tienen obligación de prestar.

De otro lado, pretendemos determinar qué estructuras organizativas y de gestión condicionan a que estas administraciones presenten un determinado nivel de deuda, ya que en ciertas ocasiones se han creado entes instrumentales para el desvío de endeudamiento de las entidades locales hacia otro tipo de entidades, evitando así que el endeudamiento aparezca en la contabilidad de la administración general del ayuntamiento, eludiendo las limitaciones impuestas. Este tipo de operaciones se ha venido a denominar en la literatura como operaciones fuera de presupuesto "*off budget*".

Figura 1. Estructura de la Tesis Doctoral
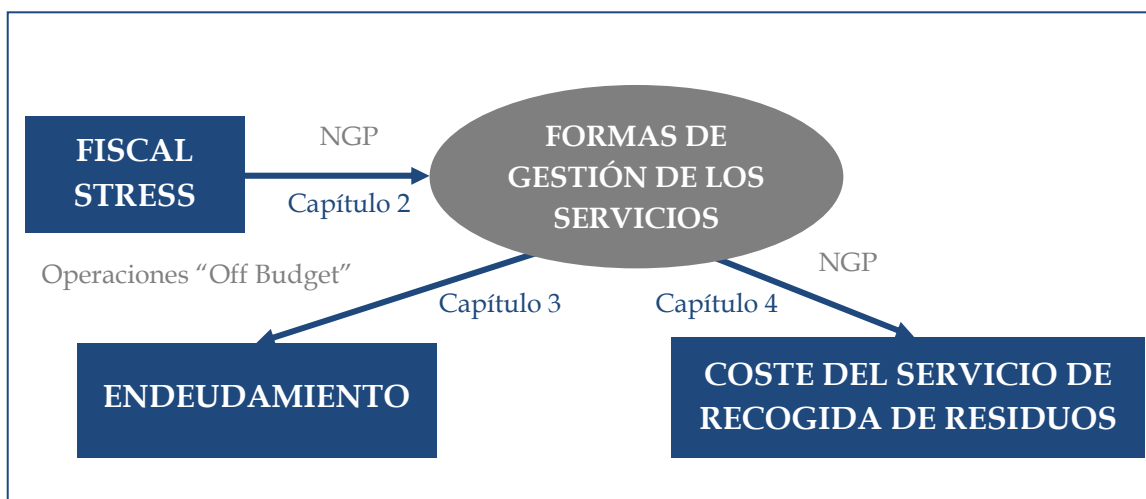
En este sentido, es relevante conocer cuándo un ayuntamiento se encuentra en una situación de *fiscal stress*. Para ello, en el segundo capítulo de esta tesis doctoral (artículo aceptado en la "Revista Española de Financiación y Contabilidad-Spanish Journal of Finance and Accounting" con factor de impacto en 2012 de 0.106 en "ISI Web of Knowledge" -Thomson-Reuters-) se presenta un modelo para medir el *fiscal stress* de las administraciones locales a través del concepto de condición financiera, aportando una amplia gama de indicadores que permiten realizar un seguimiento y diagnóstico de las finanzas locales, con objeto de posibilitar la toma de decisiones encaminadas a la reducción del *fiscal stress*.

No obstante, el concepto de condición financiera no es una magnitud directamente observable, por lo que no tiene una forma unívoca de ser medido, por lo que diversos autores han tratado de definir y desarrollar este concepto, proponiendo diferentes alternativas para llevar a cabo su medición.

Así, Berne y Schramm (1986) señalan que para una correcta evaluación de la condición financiera se exige considerar una serie de magnitudes del entorno relacionadas con las necesidades y preferencias de la sociedad, condiciones locales que afectan a la prestación de

servicios públicos, coste de factores productivos, recursos de la sociedad y políticas públicas que afectan a la entidad local. De esta forma, la condición financiera se convierte en una magnitud compleja, al incorporar factores financieros y no financieros tanto a corto como a largo plazo.

Igualmente, Hammer y Green (1996) consideran que las necesidades fiscales de las ciudades y sus limitaciones geográficas determinan el desarrollo económico de las políticas y actividades, es decir, existen condiciones demográficas, socioeconómicas y fiscales que afectan a la prestación de servicios por parte de los ayuntamientos. Así pues, las variables socioeconómicas han sido consideradas en la medición de la salud financiera de las entidades locales para valorar las preferencias y necesidades de los ciudadanos (Boyne, 1996). En este sentido, se han realizado varios trabajos que evalúan la influencia que los factores del entorno ejercen sobre las políticas de gasto (en Reino Unido, véase Barnett et al., 1992; Boyne et al., 2001), sobre la situación financiera de la organización (Leone, 1976; Petersen, 1977; Berne, 1992), o sobre una estructura de indicadores, tal como la Evaluación Integral del Desempeño (CPA) en Reino Unido (Andrews et al., 2005; Andrews et al., 2006)

Por tanto, los estudios antes mencionados revelan la necesidad de explorar o modelar las relaciones entre la actividad municipal y el entorno social, económico y demográfico que caracterizan a la demanda de servicios prestados. Precisamente, el concepto de condición financiera ha evolucionado hasta incluir factores financieros, ambientales y organizacionales. Ya que se ha considerado que los factores ambientales afectan tanto en la creación de demanda como en la provisión de servicios públicos. Por su parte, los factores financieros reflejan la condición de buena salud de las finanzas municipales y los factores organizacionales hacen referencia a la capacidad del gobierno para adaptarse a los cambios del entorno (Zafra-Gómez et al., 2006).

Con todo lo anterior, una medida adecuada de la condición financiera debería de tener en cuenta elementos que midan la solvencia a corto plazo, la solvencia presupuestaria –con especial énfasis en la sostenibilidad, flexibilidad y la independencia financiera– así como, aquellos factores externos que pueden condicionar la prestación de los servicios públicos locales (Andrews, et al., 2005; Lindblad, 2006). En concreto, la construcción de esta batería de indicadores se convierte en la mejor herramienta de valoración y comunicación de la situación de socioeconómica y de la calidad de vida municipal, ya que hace posible obtener una imagen completa de los diversos elementos que componen la condición financiera de la entidad local y la incidencia de cada elemento en la probabilidad de cambio hacia la adopción de políticas de la NGP.

En este sentido, parece evidente, que un empeoramiento en la condición financiera se traducirá en cambios en las políticas fiscales y en las estrategias a seguir por los gobiernos locales, así como cambios en la estructura organizativa de la entidad local (Hendrick, 2011). Concretamente, en el trabajo de Levine (1978) se ofrece una serie de opciones para superar los problemas de *fiscal stress* dependiendo de la fase o el grado en la que se encuentran inmersos los gobiernos. Así, una primera fase, que denomina "*delaying*" emplean tácticas de retardo, donde los gobiernos niegan la gravedad de los problemas fiscales, esperando que esos problemas sean únicamente temporales. En la segunda fase, se usan tácticas de "*stretching and resisting*" con la pretensión de hacer más con la misma cantidad de recursos, evitando recortes e incrementos visibles en los impuestos. La penúltima fase "*cutting and smoothing*" emplea tácticas para restringir y directamente contrarrestar los efectos de un *fiscal stress* grave. Finalmente, la última fase "*Extreme survival*" consistiría en el empleo de medidas radicales para funcionar a un nivel mínimo. De todas las fases, es precisamente en la segunda *stretching and resisting* donde Levine (1978, 1980) plantea la opción de cambiar la forma de gestionar los servicios

públicos mediante la adopción de procesos de externalización y de colaboración para superar los problemas de *fiscal stress*.

No obstante, existen más opciones que los municipios pueden emplear para superar sus problemas de *fiscal stress*, tales como la creación de agencias o empresas públicas (Hood, 1995) o la cooperación intermunicipal (Warner, 2006), es decir, medidas de la Nueva Gestión Pública. En este sentido, resulta fundamental predecir las acciones que las autoridades locales ejercerán en respuesta a situaciones de *fiscal stress*.

De esta forma, en el segundo capítulo de esta tesis doctoral se ha empleado una muestra de 1,572 municipios españoles durante una amplio horizonte temporal (2002-2009), usándose un modelo logit mutltinomial de datos de panel de efectos aleatorios (PMLM) que ha contribuido a predecir qué formas de gestión son adoptadas por los municipios cuando se enfrentan a situaciones de *fiscal stress*, usando no sólo medidas como las limitaciones legales al endeudamiento, la carga financiera y el tamaño de las transferencias del gobierno central al local, sino medidas de solvencia a corto plazo, de endeudamiento y de déficit presupuestario, es decir, hemos acudido al concepto de condición financiera desarrollado por Groves et al. (2003) y adaptado para el caso español en los trabajos de Zafra-Gómez et al. (2006, 2009a, 2009b, 2009c).

De la relación definida previamente, entre condición financiera y Nueva Gestión Pública –NGP–, es necesario hacer especial énfasis en uno de los elementos que la componen, nos referimos al concepto de flexibilidad o nivel de endeudamiento, recurso financiero que requiere un mayor control por parte de las autoridades públicas superiores, que establecen límites a su acceso. El especial énfasis que requiere el comportamiento de esta variable y su relación con las formas de gestión de servicios públicos, se debe a que numerosos ayuntamientos podrían

emplear instrumentos de la NGP para desviar parte de su endeudamiento a los entes creados en base a esta teoría. Este análisis se recoge en el tercer capítulo de esta tesis doctoral y que a su vez forma parte del artículo aceptado en "Gestión y Política Pública" con factor de impacto en 2012 de 0.100 en "ISI Web of Knowledge" -Thomson-Reuters-.

La situación y evolución del endeudamiento es continuo motivo de preocupación por parte de políticos y gestores. El comportamiento de esta variable está en el punto de mira de multitud de trabajos (Escudero, 2002; Benito-López y Bastida, 2005; Mora y Montesinos, 2007; Benito-López et al., 2009; Guillamón et al., 2011; Brusca et al., 2012), debido a que ha presentado, en numerosas ocasiones, y en determinados niveles de la administración, un marcado perfil creciente. Esta situación, unida a la importancia que alcanza la estabilidad presupuestaria y la sostenibilidad financiera en el ámbito local, nos conduce a la necesidad de avanzar en el conocimiento de herramientas y metodologías que permitan evaluar el grado de acierto de las autoridades en la gestión de sus recursos y permitan detectar y evitar, en la medida de lo posible, que se enfrenten a niveles excesivos de endeudamiento y, por ende, a un empeoramiento de su salud financiera.

En este contexto, y considerando las restricciones al endeudamiento a las que se ven sometidos los gobiernos locales, hemos profundizado en el estudio de este indicador de la condición financiera, con el propósito de determinar si la creación de agencias, empresas públicas, consorcios y los procesos de externalización de servicios, junto con los aspectos políticos y de la situación financiera interna de la entidad, son factores que condicionan que el ayuntamiento presente un determinado nivel de deuda. Y es que uno de los mecanismos con los que evitar el control del endeudamiento y sus límites normativos es el uso por parte de los gestores públicos de instrumentos proporcionados

por la NGP a través de las denominadas en la literatura como operaciones fuera de presupuesto "*off budget*", con las que se aumenta la deuda de la corporación pero imputando la misma a entes instrumentales en un intento de mejorar la salud financiera municipal, evitando el cómputo en los presupuestos municipales de determinados niveles de deuda.

Asimismo, comenzábamos la introducción de esta tesis doctoral, identificando un problema que necesitaba de un mayor nivel de análisis por parte de los distintos investigadores: la relación entre *fiscal stress* y la adopción de formas de gestión de la NGP. La idea que subyace es que estas formas de gestión implementadas en el marco de la NGP deben de provocar un ahorro en costes y, es precisamente, este argumento – ahorro en costes– el que da lugar al desarrollo del cuarto capítulo de esta tesis doctoral (artículo publicado en "Public Administration" con factor de impacto en 2012 de 1.062 en "ISI Web of Knowledge" – Thomson-Reuters-).

En este capítulo procedemos a determinar si las formas de gestión que los gestores públicos han elegido como las más adecuadas para prestar sus servicios son las que realmente producen menores costes. Obtener evidencia sobre este aspecto se hace aún más necesario si cabe hoy en día, debido a la actual crisis económica, lo que implica la necesidad de determinar un tamaño óptimo para la prestación de los servicios públicos locales, haciendo especial énfasis en las formas de gestión que permitan reducir los costes de los servicios (Andrews y Boyne, 2009; Peters, 2011).

Pero no podemos obviar que en todo proceso productivo resulta fundamental conocer la calidad de los servicios prestados. En este sentido, Montesinos y Brusca (2009), señalan que las principales razones para la implementación de reformas en la gestión pública se encuentran en la búsqueda de un uso más racional de los recursos, así

como en el logro de una mayor calidad y una mejor gestión del medio ambiente. Asimismo, como indican Pollitt y Bouckaert, (2000) la calidad es un objetivo central de los gestores públicos, convirtiéndose en un elemento esencial para lograr una nueva administración que sepa responder a los retos derivados de la transformación de la sociedad y a las demandas de los ciudadanos, situándoles en el centro de sus decisiones. Según los trabajos de Morgan et al. (1981), Stein (1990) y Boyne (1998), la introducción del operador privado en la gestión de los servicios públicos locales no sólo supone la posible reducción de los costes, sino también la búsqueda por parte del gestor público de una supuesta mejora de la calidad del servicio, especialmente en aquellos municipios de menor tamaño. Sin embargo, la evidencia no es clara, ya que autores como Hart et al. (1997) señalan que al operador privado sólo le interesa reducir costes y esto se consigue a través de la reducción de los niveles de calidad de los servicios prestados. Diversos estudios de esta variable han dado lugar a conclusiones dispares (Boyne y Walker, 2002).

Pero la calidad y la forma de gestionar el servicio no son únicamente los factores que pueden influir en el coste del servicio evaluado, ya que, existen elementos externos que pueden condicionar la prestación de los servicios públicos locales: son los denominados factores socioeconómicos y políticos.

Sin embargo, debido a la multitud de servicios que prestan las entidades locales, en este capítulo de la tesis doctoral nos centramos únicamente, en la prestación del servicio de recogida de residuos, al tratarse de uno de los servicios básicos más complejos y costosos que los ayuntamientos tienen obligación de prestar y por tanto, uno de los más estudiados en la literatura (Bosch et al., 2000; Termes-Rifé y Alerm-Domènech, 2007; Bel et al., 2010; Benito-López et al., 2011; Rogge y De Jaeger, 2012, Jacobsen et al., 2013, entre otros). Así pues, evaluamos el coste del servicio público de recogida de basura teniendo

en cuenta la influencia del entorno socioeconómico y político, la utilidad de la medida obtenida permitirá identificar qué forma de gestión – individual o conjunta, pública o privada– conduce a alcanzar niveles óptimos de calidad y coste en la prestación de este servicio, generándose información relevante sobre las fórmulas de gestión en las que ayuntamientos de características similares están desarrollando políticas públicas más eficientes.

En este sentía, hemos desarrollado un total de tres hipótesis, con la primera pretendemos contrastar el impacto en los costes de las potenciales economías de escala a través de la comparación entre la prestación individual y conjunta del servicio. Con la segunda hipótesis queremos determinar si existen diferencias en los costes del servicio al prestarlo mediante formas de gestión públicas y privadas. Y, finalmente, con la tercera hipótesis perseguimos evaluar el impacto de los niveles de calidad en los costes. No obstante, a diferencia de estudios previos, para contrastar las hipótesis formuladas hemos empleado la metodología propuesta por Plumper y Troeger (2007), que permite realizar un análisis de datos de panel para un amplio horizonte temporal, que en nuestro caso finaliza con el inicio de la presente crisis económica y financiera global. Además, hemos considerado un total de seis formas de gestionar este servicio, entre fórmulas públicas, privadas, individuales y conjuntas. Por tanto, los resultados obtenidos, permitirán avalar el uso de determinadas opciones de gestión para la reducción de los costes y poder afrontar así, de mejor forma, los problemas económicos y financieros a los que se enfrentan estas administraciones.

Finalmente, en el quinto capítulo se exponen las conclusiones más relevantes obtenidas de las diferentes investigaciones realizadas, así como las futuras líneas de investigación.

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CHAPTER 2: DO LOCAL AUTHORITIES USE NPM-DELIVERY FORMS TO OVERCOME PROBLEMS OF FISCAL STRESS?

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Abstract

Finding solutions to the unfavourable economic and financial situation currently facing local authorities is of crucial importance. One such solution is to adopt mechanisms for restructuring local public services, through new management approaches to reduce costs and thereby reduce fiscal stress. The aim of this paper is to determine the probability of a city council changing the way it manages services, selecting from different options, in response to situations of fiscal stress. To address this issue, we studied a sample of 1,572 Spanish municipalities for the period 2002-2009, using a random-effects panel multinomial logit model. The results obtained show that outsourcing and inter-municipal cooperation are the management formulas that councils are most likely to choose in response to a financial crisis, especially one arising from insufficient transfers, negative cash flow, debt or budget deficit.

1. INTRODUCTION

Various studies of fiscal stress have been made in response to the current economic and financial crisis (Zafra-Gómez et al., 2009a; 2009b; Zullo, 2009). The effects of this crisis on public administrations are mainly reflected in a stricter control of budgets and deficits and this situation has prompted a search for solutions to fiscal stress, based primarily on recentralising the decision-making process and even on the use of new models of governance (Peters, 2011). Accordingly, it is necessary to continue seeking greater efficiency, with particular emphasis on forms of public management that enable the costs of service provision, and thereby fiscal stress, to be reduced (Zafra-Gómez et al., 2013).

Among the options open to municipalities for alleviating situations of fiscal stress, one of the most common is to search for new forms of service delivery, by means such as privatisation (Hood, 1995), the creation of agencies or public firms (Hood, 1995) or inter-municipal cooperation (Warner, 2006). The first two of these, privatisation and agencification, are based on the theory of public administration applied via New Public Management (NPM). Among other aspects, NPM seeks to improve management within public administrations by applying formulas derived from the private sector, through changes in the organisational structure and through the way in which services are provided (Hood, 1995; Van Helden, 2000). Specifically, the aim of this is to achieve a market-oriented outlook and thus increase efficiency, effectiveness and productivity by the use of contracting-out (or outsourcing), or through changes in the organisational structure, creating organisms that are more flexible and less hierarchic, which delegate the decision-taking process, and which achieve greater agility in organisation processes and therefore, greater efficiency and

effectiveness in the provision of public services in order to make a more economical use of resources (Diefenbach, 2009).

In considering the NPM approach of decentralisation and outsourcing, some municipalities have difficulty in carrying out such actions, mainly due to their small size (Bel and Fageda, 2006; Mohr et al., 2010). Many are not large enough to implement decentralisation and the creation of public agencies or public firms (Hood, 1995), while outsourcing, on a relatively small scale, is not sufficiently profitable to be attractive to private operators (Bel and Fageda, 2006; Warner, 2006). For this reason, many authorities have considered inter-municipal cooperation. The intention of this is to create a larger organisation, so that economies of scale would be produced; moreover, the more efficient and better coordinated the service provision, the greater the facility for operating in the public interest, rather than for private gain (Boyne, 1996).

However, various recent studies have questioned whether it is really possible to improve management via the adoption of NPM-based formulas, because the latter can lead to problems of insufficient coordination among structures, inadequate leadership of the organisation and an erosion of responsibility, all of which increase costs and reduce efficiency (Rhodes, 1996; Diefenbach, 2009).

In this respect, post-NPM (Christensen and Lægreid, 2008) and neo-Weberian administration (Pollitt, 2009) ideas have been championed, with arguments in favour of re-centralising the public sector. These theorists claim that the formulas employed under NPM have given rise to problems of reduced efficiency, coordination and control, as well as unnecessary overlapping in the provision of services (Zafra-Gómez et al., 2013).

In this situation, what option should be adopted by municipalities facing a financial crisis? To provide services via agencies

or public firms, or alternatively, to outsource or seek formulas of broad-based cooperation, as recommended under NPM hypotheses? (Andrews, 2011; Queeneville et al., 2010).

This question is the main focus of the present study; it is fundamental to target the question of how likely a municipality is to choose from different options to change the management of its services in response to situations of fiscal stress. Concretely, the options evaluated in this paper—outsourcing, inter-municipal cooperation, governance via public firms or agencification—are those considered in academic literature to generate greatest cost reduction and relief from fiscal stress, as reported in Mohr et al. (2010), which is why a multinomial model must be used. However, for a study of the relation between NPM-delivery forms and fiscal stress to be well grounded, an extended period of time should be evaluated. Accordingly, this study uses a panel data structure addressing an extended period (2002-2009), which enables us to create a model that reflects the dynamic nature of the phenomenon, as recommended by Bel and Fageda (2007).

Finally, a very novel aspect is the fact that, unlike previous studies (Zullo, 2009), this work contributes to predicting which forms of managing services are adopted by municipalities when they are faced with fiscal stress, using not only measures such as the tax burden, legal limitations on local tax levels and the size of transfers from central to local governments (Bel and Fageda, 2007), but also measures of short-term cash solvency, debt and budget deficit. Thus it is possible to obtain a complete image of the different elements comprising the financial condition of a local authority, and the incidence of each such element on the probability of evolution toward the adoption of NPM policies.

The rest of this paper is structured as follows. In Section 2, we examine the theoretical framework for financial stress with respect to processes of change toward other forms of management, implemented as part of NPM theory. Here, too, we formulate the fundamental hypotheses proposed. Section 3 describes the different indicators used to measure fiscal stress and the methodology applied. Then, Section 4 describes the specification of the model required in order to test the hypotheses proposed. In Section 5 we present the empirical study and analyse the results obtained, and the final section presents our main conclusions and a brief discussion.

2. NPM-DELIVERY FORMS AND THEIR RELATIONSHIP WITH FISCAL STRESS. THEORETICAL FRAMEWORK AND THE HYPOTHESES PROPOSED

In the academic literature, the question of financial crises is not a new one. Those experienced by cities such as Cleveland and New York in the 1970s and early 1980s led to the development of indicators to measure and predict when a local authority might be facing fiscal stress. Efforts to evaluate cities' financial problems in the USA continue (Kloha et al., 2005a, 2005b) and models have been developed by many other countries, for example in Australia (Dollery et al., 2006) the UK (Audit Commission, February 2007), Israel (Carmeli, 2008) and Spain (Zafra-Gómez et al., 2009b), in which diverse concepts are used to determine whether a local authority is undergoing fiscal stress (in its different manifestations and terminology, such as fiscal crisis, fiscal stress, fiscal distress, fiscal emergency or financial condition; see Honadle, 2003). Faced with fiscal stress, local governments should adopt strategic actions aimed at correcting the current situation if they wish to avoid even worse results. (Dutton, 1986).

Different situations of fiscal stress have given rise to actions aimed at alleviating or overcoming them (Carmeli, 2008), and such actions have often been implemented with reference to NPM ideas. As observed by Hood (1995: 102), "NPM is often interpreted as a response to fiscal stress and resistance to extra taxes", pointing out that the local governments with the worst indicators of debt and the largest deficits will be those most likely to implement NPM policies (Bel and Fageda, 2007). This is the case, given that the use of NPM to relieve fiscal stress allows municipal authorities to avoid tax increases and therefore allows them to maintain or increase their expectations of votes or re-election in government (Hood, 1995).

Thus, fiscal stress is a key element when implementing change in organisations, for when a municipality is faced with financial duress and takes a policy decision not to increase taxes nor implement cutback management measures, one of the few alternatives remaining is to introduce drastic changes in its organisational structures (Christoffersen and Larsen, 2007, Zafra-Gómez and Muñiz, 2010).

However, implementing these types of organisational changes in the face of fiscal stress can represent a great opportunity to change something that was malfunctioning. These organisational problems may not have been exposed, nor a solution implemented, had it not been for the crisis (Miller and Svara, 2009).

Having established the important role that fiscal stress plays as an element for change in the organisational structure of local authorities, the next step is to identify what types of changes within the NPM framework can be utilised. Following Diefenbach (2009), of the five major areas into which NPM measures may be classified (*Business environment and strategic objectives; Organisational structures and processes; Performance; Management and measurement systems; Management and managers and Employees and corporate culture*) we

will discuss two: *Business environment and strategic objectives,* and *Organisational structures and processes.* Within these two extensive types of measures, there has been a rapid increase in the options available for the provision of public services, including the adoption of market mechanisms such as outsourcing (with profit or non-profit firms), inter-municipal cooperation, agencification or public firms (Mohr et al., 2010), aimed at reducing service delivery costs, raising efficiency and alleviating fiscal stress (Osborne and Gaebler, 1992; Hood, 1995; Boyne, 1998; Bel and Warner, 2008; Christensen and Lægreid, 2008; Bel and Fageda, 2010; Andrews, 2011). For these reasons it is especially pertinent to study these management formulas for alleviating situations of fiscal stress.

The theoretical framework for these approaches, as described in the following sections, is composed of several different theories for contextualising the current status of each of these forms of management. Thus, outsourcing is based on the Public Choice theory (Niskanen, 1971) and the Property Rights theory (Shleifer, 1998) and is applied to public administration through NPM (Hood, 1995), while inter-municipal cooperation is based on achieving economies of scale and forms part of the theoretical framework of NPM (Lavery, 1999; Mohr et al., 2010). The options of agencification and public firms are also addressed by the hypotheses of NPM (Andrews, 2011). If the model being studied predicted a lower probability of occurrence for any of the above options, this would show that in a situation of fiscal stress these options are not adopted by the municipality, thus validating some of the postulates of the theoretical framework of post-NPM or Neo-Weberian bureaucracy positions (Pollitt, 2009; Christensen and Lægreid, 2011).

2.1. OUTSOURCING AND FISCAL STRESS

The main reason for local councils to outsource processes is to reduce costs, and such savings are especially important for municipalities affected by fiscal stress (Brudney et al., 2005). According to NPM, if a local government is faced with fiscal stress, it should orient public services toward the application of market techniques (Stark, 2002). A common means of doing so is via the externalisation of public services with the aim of improving effectiveness and efficiency in the provision of public services (Osborne and Gaebler, 1992; Hood, 1995; Bel and Warner, 2008).

Bel and Fageda (2007) observed that one of the hypotheses most commonly analysed and empirically tested is the relationship between fiscal stress (tax burden, legal limitations on local tax levels and the size of transfers from central to local government) and privatisation (Brown et al., 2008; Hebdon and Jalette, 2008). These studies suggest that local officials consider privatising or utilising intergovernmental arrangements to provide services, and often respond to fiscal problems by such means (International City/County Management Association, 1989). In short, and as remarked by Zullo (2009: 461) "Empirically, measures of fiscal stress, or any institutional constraint on local government to tax and spend, should positively correlate with private contracting". With the above considerations in mind, we propose Hypothesis 1.

H_1: The greater the fiscal stress, the greater the probability of a local authority implementing outsourcing procedures.

2.2. AGENCIFICATION AND PUBLIC FIRMS AND ITS RELATIONSHIP WITH FISCAL STRESS

One of the precepts of NPM is the necessity for public organisations, when they grow beyond a given size, to create public agencies or other, decentralised, bodies capable of taking on the task of providing services, such as public firms [1] (Hood, 1995; Mora and Montesinos, 2007; Diefenbach, 2009; Brusca et al., 2012). Decentralisation is also undertaken in policy provision, resulting from externalities and the scale effects associated with policies and local preferences. It is defined as the creation of specific units for the provision of given services, these units being granted an independent budget and having decision making powers, and thus organisations more amenable to control by professional managers are created (Andrews, 2011). Such operations include the transfer of responsibility for planning and management, and the transfer of resources from the central government (regional or local) to other agencies (Chiriboga, 1994; Ribot, 2001). According to the NPM philosophy, organisations that have decentralized the services they provide obtain better results than those that have not, being more flexible and providing a closer, more personalised service (Boyne, 1996). Agencification brings about gains in efficiency because it creates more manageable units, and also empowers lower levels of the administration (Andrews, 2011). According to NPM theory, it allows managers to have greater control over budgets and strengthens the separation between the purchasing and implementation arms of public organisations, which would enable public agencies to reduce costs, increase efficiency and decrease the level of fiscal stress suffered. However, in the three studies that Andrew cites, which link efficiency and agencification, such results are not clearly corroborated. In this respect, Verhoest et al. (2010) and Queeneville et al. (2010) stated that the relation between efficiency and

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[1] In Spain, a public company in which the majority of the share capital belongs to the municipality can be considered a type of agencification, in accordance with the NPM theoretical framework.

agencification has been insufficiently studied to date, and that further research is needed to seek evidence of such a relation. Accordingly, and taking into account the postulates of NPM theory, we propose the following hypotheses:

H_2: The greater the fiscal stress, the greater the probability of a local authority creating autonomous agencies.

H_3: The greater the fiscal stress, the greater the probability of a local authority creating public firms.

2.3. INTER-MUNICIPAL COOPERATION AND FISCAL STRESS

The forms of decentralised management and of outsourcing mentioned are most commonly used by larger municipalities, because smaller ones do not always have access to providers for the services to be outsourced (Warner and Hefetz, 2003; Warner, 2006); moreover, high costs may be incurred in monitoring the privatised service (Bel and Fageda, 2006). For these reasons, municipalities can choose to join forces, via inter-municipal cooperation, to provide services that would be too costly for each one alone. Bel and Fageda (2006) analysed the use made of inter-municipal cooperation to produce efficient local services. The principal hypothesis they examined was that small local authorities could employ inter-municipal cooperation to exploit economies of scale (Warner and Hefetz, 2003; Dijkgraaf et al., 2003; Warner, 2006; Zullo, 2009). In addition, with this approach, the municipalities would retain control of the service provided, which is not the case with outsourcing (Warner, 2006). For this reason, assuming that greater cooperation leads to lower spending and thus lower fiscal stress for local government, there is a high probability that municipalities undergoing fiscal stress will opt for the service to be provided in the form of inter-municipal cooperation. Therefore, our Hypothesis 4 is formulated as follows:

H_4: The greater the fiscal stress, the more likely a local authority is to adopt or increase its inter-municipal cooperation.

However, the fulfilment of NPM postulates has been questioned; some authors have remarked that decentralised bodies might be characterised by a lack of coordination and control, and thus obtain worse results than those that do not create subsidiary agencies or public firms. Moreover, not all studies have found a positive relationship between fiscal stress and outsourcing, for diverse reasons. On the one hand, according to the literature on outsourcing, there may be an inadequate calculation of the total cost of externalisation, ignoring the transaction costs that may arise from the existence of incomplete contracts (Sappington and Stiglitz, 1987; Brown and Potoski, 2003) failing to reflect the full transaction costs, i.e. those costs that could not be estimated during the contract negotiation. In consequence, the real cost savings would be offset by these transaction costs, and the local authority could even incur higher costs and therefore its fiscal stress would not be reduced (Levin and Tadelis, 2005; Brown et al., 2008; Hart and Moore, 1990; Brown et al., 2010).

Other problems related to agencies and public firms have also been reported; the creation of decentralised structures could lead to problems of coordination and control between such structures, resulting in increased costs and reduced efficiency (Christensen and Lægreid, 2008). In consequence, fiscal stress might not be alleviated. These considerations have given rise to a new tendency in public management thinking, termed post-NPM or Neo-Weberian bureaucracy. Therefore, a vertical tightening of the system combined with increased horizontal collaboration may be more efficient than a more fragmented system, focusing mainly on efficiency in service delivery (Christensen and Lægreid, 2006). The introduction of this theoretical framework reflects the fact that if municipalities unambiguously opted for one of the four options proposed, and dismissed the others, this would

provide empirical evidence that not all NPM options are chosen by public management as a way of alleviating fiscal stress.

2.4. SOCIOECONOMIC CONTEXT AND POLITICAL FACTORS AS TRIGGERS OF CHANGE IN STYLES OF MANAGEMENT

Traditionally, the ideological attitude of governments has been included in models seeking to determine the main factors underlying outsourcing (Bel and Fageda, 2007). The association between parties representing a left-wing ideology and outsourcing is expected to be negative, while for those with a conservative ideology, it is more likely to be positive (Zullo, 2009). Nevertheless, very few studies have actually found a significant association in this respect (Dubin and Navarro, 1988; Dijkgraaf et al., 2003; Walls et al., 2005; Bel and Fageda, 2007; Zullo, 2009). Thus, we propose the following hypothesis:

H$_5$: Right-wing local governments are more likely than left-wing ones to implement NPM delivery forms.

Moreover, the work carried out to date has not taken into account whether the political fragmentation of government might influence outsourcing processes. The theoretical model developed by Ashworth et al. (2005) and the studies by Hagen and Vabo (2005), which estimated that high fragmentation in government increases the long-term possibility of rising public expenditure, may mean that municipalities introduce outsourcing processes in order to remove the most costly services from their budgets. On the contrary, authors such as Alesina and Rosenthal (1994) have observed little influence of fragmentation on the implementation of fiscal policy. Moreover, Jones et al. (1997) consider that fragmented governments introduce insignificant budgetary changes. In the Spanish case, Benito-López and Bastida (2008) underscore that the less political fragmentation,

the greater the local authority expenditure. If this were so, we would not be able to establish any specific political leaning regarding the relationship between political fragmentation, budget expenditure increase and consequent shift toward other management formulas that would enable cost reductions. Accordingly, we present the following hypothesis.

H_6: *Fragmentation of local governments can increase/decrease the likelihood of implementing NPM delivery forms.*

Finally, it is necessary to include a set of variables to measure the impact of social and economic aspects on the probability of changes being implemented in the management of public services. The papers by Rubin and Stein (1990) and Zullo (2009) considered the variables of population decline and of rising unemployment to be triggers of the outsourcing process, due to the shrinking tax base that would result. Therefore, we propose the following hypothesis.

H_7: *When the population is falling and unemployment rising, there is a higher probability of NPM delivery forms being introduced.*

3. HOW TO MEASURE FISCAL STRESS IN LOCAL GOVERNMENTS?

According to Boyne (1998) one of the main problems encountered in measuring the relationship between fiscal stress and outsourcing is the paucity of good measures of fiscal stress. Bel and Fageda (2007) observed that the only measures used to represent fiscal stress are legal limitations on indebtedness and the allowable tax burden. For this reason, the present work seeks to contribute a broad range of indicators

to measure fiscal stress, taking as our basic concept that of financial condition.

Traditionally, financial condition is taken as a government's ability to adequately provide services and meet its future obligations (GASB, 1987). It can be measured with respect to the situation of its net assets, the budgetary balance or the net treasury position (GASB, 1999, 2004). For some authors, this concept mainly concerns the study of assets and liabilities that are converted into cash or which need only be addressed in the distant future, together with an analysis of current revenue and expenditure flows, taking into account the municipalities' characteristics regarding the acquisition of financial liabilities within a given time horizon, and in a concrete space or economic dimension (Copeland and Ingram, 1983; Clark, 1994; Groves et al., 2003).

Nevertheless, some authors have addressed this concept within the contexts of financial crisis, fiscal crisis (Douglas and Gaddie, 2002) or fiscal disaster (Kloha et al., 2005a), noting that the warning systems of the financial condition of an entity should be taken into account, and particularly a deficit of income to operating expenses in a year (and even more so if it is maintained over several years), an excess of liabilities over revenues, and short-term loans that remain outstanding at the end of the year (ACIR, 1973).

Elaborating on the concept of financial condition, Groves et al. (2003) considered this to be the result of several elements of diverse nature that can be measured through four specific variables: cash solvency, budgetary solvency, long-term solvency and service-level solvency (GASB, 2004; Wang et al., 2007). On the other hand, Greenberg and Hillier (1995) and CICA (1997) believe that an organisation's financial condition could be measured using three indicators: sustainability, flexibility and vulnerability. For this purpose,

sustainability is defined as the organisation's capacity to maintain, promote and preserve the social welfare of its citizens through the use of the resources at its disposition. Flexibility is taken to be the organisation's ability to respond to changing economic and financial circumstances, within the limits of its fiscal capacity; this ability will depend on its reactions to such changes via increases in taxation levels, in public debt or in transfers received (Balaguer-Coll, 2001). Vulnerability is understood as the organisation's level of dependence as concerns the external funding received to maintain public spending levels, via transfers, subsidies and grants (Zafra-Gómez et al., 2009a, 2009b).

In the present study, we examine the following parameters: short-term solvency, defined as the organisation's ability to generate sufficient liquidity to pay its short-term debts (Groves et al., 2003); flexibility, its capability to respond to changes in the economy or in its financial circumstances, via modifications to public debt (Greenberg and Hillier, 1995; CICA, 1997); budgetary sustainability (or service-level solvency), the organisation's ability to maintain, promote and protect the social welfare of the population, employing the resources at its disposal (Greenberg and Hillier, 1995; CICA, 1997; Groves et al., 2003); and financial independence, the level of dependence on external funding received via transfers and grants (ICMA; 2003; Honadle, 2003; Zafra-Gómez et al., 2009a). Finally, we consider long-run solvency, using a broad time horizon for this study.

On the basis of the above considerations and because, as we have shown, the correct measurement of fiscal stress requires the use of the general concept of financial condition, we must examine short-term solvency, budgetary solvency –with particular emphasis on fiscal sustainability and debt repayment flexibility– and financial independence, that is, the extent to which the entity is able to meet its obligations from tax revenues and greater indebtedness (Guillamón et

al., 2011). All of these measures are set out in Appendix (Table 4) and are evaluated using the set of indicators derived from budgetary and balance sheet information.

Specifically, we introduce two indicators of cash solvency, one that includes net short-term receivables, liquidity and net short-term liabilities (CSI, the cash surplus index) and one that only considers liquidity and its equivalents held by the organisation (LI, liquidity). Flexibility is described by a debt limitation indicator (NSI, the net savings index) and a measure of the ability to repay debt (TVFCI). The measure of financial independence reflects how organizations can finance their expenditure without subsidies. Finally, sustainability indicates the budget deficit or surplus. In order to analyse these aspects and due to the budgetary nature of the indicators of flexibility, sustainability and financial independence, the latter concepts have been grouped within the budgetary solvency element.

4. MODEL SPECIFICATIONS

In attempting to find solutions to the unfavourable economic and financial situation, local authorities may adopt mechanisms for restructuring local public services, through new management approaches to reduce fiscal stress. That is, each local authority takes the decision of which mechanism to use based on the alternative that maximizes the utility to be gained thereby.

In this sense, a multinomial logit model (PMLM) can be useful. It allows us to analyse decisions across more than two categories, and thus determine choice probabilities for different categories (Maddala, 1983; Wooldridge, 2002). Specifically, it is assumed that each individual i (local authority) is faced with j different choices (NPM forms) at time t that maximizes their utility. The proposed model specification estimates

the probabilities of a given NPM delivery form being adopted in each municipality.

Under the theoretical framework based on the discrete choice model proposed by McFadden (2001) and McFadden and Train (2000), we assume that the decision maker i must choose among j alternatives at time t given a deterministic indirect utility function of alternative j that can be captured by the explanatory variables, which are specified as:

$$V_{ijt} = \alpha_j X_{it} \beta_j + \varepsilon_{njt} \tag{1}$$

Where X_{it} is a vector of municipality-specific characteristics in each year, α_j represents choice-specific constant terms for NPM delivery form j and ε_{ijt} is a random term that is *iid* extreme value. An alternative way to represent this idea is to consider that the individual i that chooses alternative j is actually selecting the highest value of indirect utility, and therefore the observed choice NPM_j of individual i will be:

$$NPM_j = \begin{cases} 1 \text{ if } V^*_{i1} \geq V_{in} \text{ for all } n \\ 2 \text{ if } V^*_{i2} \geq V_{in} \text{ for all } n \\ \quad . \\ \quad . \\ \quad . \\ J \text{ if } V^*_{ij} \geq V_{in} \text{ for all } n \ n \end{cases} \tag{2}$$

Where the decision makers are Spanish local authorities and the alternatives represent the four types of NPM form observed: outsourcing, agencification, public firms and inter-municipal cooperation.

To deal with the particular structure of these municipal data—longitudinal data structure and random time effects— a panel multinomial logit model (PMLM) is used to estimate the probability that a decision maker *i* will select alternative *j* at time *t*. As shown by Train (2003), this can be computed as:

$$P_{ijt} = \frac{\exp\left(\alpha_j + X_{it}\beta_j\right)}{\Sigma_{k=1}^{J}\exp\left(\alpha_j + X_{it}\beta_j\right)} \text{ for } j = 1,2,3,4 \text{ and } P_{i0t} = \frac{1}{\Sigma_{k=1}^{J}\exp\left(\alpha_j + X_{it}\beta_j\right)} \qquad (3)(4)$$

Where the option of not selecting a NPM delivery form, j=0 is used as the reference alternative or base category. Panel data provide the same amount of information, better variability and lower level of collinearity among the regressors, and also increase the number of degrees of freedom and at the same time reduce multi-collinearity, hence improving the model's efficiency (Hsiao, 1985; Klevmarken, 1989).

The assumption of no intertemporal correlation underlies most studies estimating the probabilities of a given NPM delivery form in municipalities, particularly in studies using cross-sectional data. While cross-sectional variations in the characteristics of municipalities can provide important insights into the determinants of NPM delivery form, these decisions are clearly an inter-temporal choice. That is, municipalities may be substantially out of long-run equilibrium if we observe their characteristics before or after a financial stress period. Moreover, the authorities may acquire a preference for certain types of NPM delivery forms. Thus, the probabilities of NPM delivery forms should be estimated with a random effects model specification that accounts for unobserved time-variant characteristics as opposed to a fixed effects specification, since the latter does not consider simultaneously the intertemporal linkage of unobserved municipality-specific attributes and time-invariant error disturbances.

The PMLM estimation is based on the maximisation of a weighted likelihood function (Rabe-Hesketh et al., 2004) using a Gauss–Hermite quadrature to approximate the integrals in the estimation procedure.[2]. However, given that the parameters of the multinomial logit model specification are difficult to interpret (neither the sign nor the magnitude of the parameter has a direct intuitive meaning), the hypothesis test has to be very carefully formulated in terms of the estimated parameters. For this reason, and as the parameter estimated through the PMLM only provides the relative probabilities of choosing alternative *j* rather than *0*, the results presented in this paper are the result of differentiating Eq. (2) with respect to the explanatory variables in order to obtain the marginal effects of the explanatory variables:

$$\frac{\delta P_{ijt}}{\delta x_{kt}} = P_{ijt}\left(\beta_{jk} - \sum_{j=0}^{J} P_j \beta_{jk}\right) \qquad (5)$$

The marginal effects are functions of the probability itself and present the advantage that they measure the expected change in probability of a particular choice being made with respect to a unit change in an independent variable from the mean. Our calculations are based on the "delta method", given the nonlinear combinations of the parameter estimated in Eq. (2), since this approximation is appropriate in the case of large samples (Greene, 2000).

This model, termed Model 2, is compared to a multinomial pool model in order to test the effects of time on the full set of data and on the hypotheses proposed. The advantages of the second model are that with panel data it is possible to test for unobservable heterogeneity; moreover, with these models we can identify and measure effects that are undetectable in time series or cross section data, and thus eliminate the bias effects produced by the aggregation of organisations or individuals.

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[2] The Stata command of GLLAMM is used to calibrate the panel multinomial logit model (Rabe-Hesketh et al., 2004).

5. APPLICATION TO SPANISH LOCAL GOVERNMENT

5.1. DATA

After the application of various filtering processes, the sample analysed in our study was finally constituted of 1,572 Spanish local authorities with more than 1,000 inhabitants for the period 2002-2009, out of a total of 3,106 Spanish local authorities with more than 1,000 inhabitants. The population included in our sample represents 77% of the Spanish population. Filters were applied to the sampling to offset the asymmetry in the information provided by the different databases. Additionally, economic and social information was obtained from the Spanish Economic and Social Yearbook (Anuario Económico y Social de España) published by La Caixa, which provides information only for municipalities with over 1000 inhabitants. Furthermore, despite the councils' obligation to provide budgetary information to the Directorate General for Financial Coordination with Regional and Local Authorities (DGCFCAEL, part of the Ministry of Finance and Public Administration), a number of local authorities do not comply with this requirement, thus further limiting our sample size[3]. Lastly, to prevent misspecification of the model and to meet the requirements of the methodology, municipalities that presented a combination of management formulas within the same year were eliminated from the sample[4].

The dependent variable takes the value 0 when the option adopted in period *t* is neither outsourcing nor agencification nor public firms nor inter-municipal cooperation, i.e., it is that of direct delivery.

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[3] Local authorities have the obligation to deliver a copy of the final statement of their budgets to the General State Administration before 31 March of the following fiscal year (article 193.5 TRLRHL). However, in 2002, 14.89% of the municipalities failed to comply with this obligation. In 2003, 24.2% failed to comply, in 2004, 17.26%; in 2005, 18.25%; in 2006, 18.04%; in 2007, 17.75%; in 2008, 14.78%; and in 2009, 8.06% of the municipalities failed to comply.

[4] Specifically, the percentage of councils that showed a combination of some of the four management formulas analysed in the same year amounted to 2% of the sample.

Outsourcing corresponds to option 1, agencification is option 2, the creation of public firms, option 3 and inter-municipal cooperation, option 4. The values of these variables, including the organisation's name, date of creation and area of activity, were obtained from the general database of local entities, maintained by DGCFCAEL. Agencification refers to the creation of autonomous agencies, the variable public firms includes companies that are 100% publicly owned, and the variable inter-municipal cooperation structures describes the number of consortia and associations in which the municipality participates. As the number of outsourcing initiatives is not compiled in the databases consulted, we hired a company specialising in the analysis of economic and financial information to determine which local authorities had contracted out functions to private companies. To this end, a purpose-built database was constructed by incorporating the announcements published by local authorities in Spanish official provincial gazettes regarding the outsourcing of certain services. Fiscal stress, economic, financial and budgetary data were obtained from DGCFCAEL. The control variables reflected the political orientation and strength of local government, and were obtained from data published by the Ministry of Finance and Public Administration.

On the basis of the above information, we created a wide-ranging database with multiple sources, containing information on a large number of local authorities located in all areas of Spain.

5.2. EMPIRICAL RESULTS

Table 1 presents the descriptive statistics for all the variables used and the correlations matrix is shown in Table 5 in Appendix. Panel a) presents the frequency observed for all NPM discrete choices observed, showing that municipalities are most likely to adopt inter-municipal cooperation (9.62%), followed by the option of outsourcing (5.56%). The options least likely to be used are those of agencification

(0.67%) and direct management by the municipality (1.05%). Panel b) gives the descriptive statistics of the explanatory variables used for our estimation.

Table 6 in Appendix presents the initial univariate analysis performed to identify the differences among the municipalities that opted for each of the service delivery options. Though only preliminary, the analysis does reveal significant differences in the indicators included in the model for each of the service management options. The value of 0 indicates the average value for the municipalities that did not adopt the option described in the corresponding part of the table, while the value of 1 reflects the average value for each indicator of those that did. As can be seen, the variable presenting most differences, for each of the options considered, is that of financial independence, which always has a p-value of 0. Budgetary sustainability, population, unemployment and political orientation also present differences, but only in two of the cases analysed. In view of these results, we consider it essential to determine the combined effect of all variables on the management forms proposed.

Table 1: Descriptive statistic

a) Dependent variable		Contracting Out	Agencification	Public Firms	Inter-municipal Cooperation
		=1	=2	=3	=4
NPM delivery form	Frequency	1.199	140	232	1.359
	Percent (%)	5.56	0.61	1.05	9.62

b) Independent variables			Code	Mean	Std. Dev.	Min	Max
Short-run solvency		Cash Surplus Index	*csi*	2.41049	2.67064	0.29739	19.88118
		Liquidity Index	*li*	1.12659	1.90317	-0.18782	14.14486
Budgetary solvency	Flexibility	Net Savings Index	*nsi*	0.08363	0.14433	-0.41482	0.48370
		Taxable Value divided by Financial Charge Index	*tvfci*	14.88806	15.25790	2.00290	77.68684
	Independece	Financial Independence Index	*fii*	0.57538	0.20086	0.17560	1.19115
	Sustainability	Non-Financial Budgetary Results Index	*nfbri*	1.02320	0.15408	0.66057	1.59683
Control variables		Political Orientation [a]	*sig*	0.57392	0.49452	0.00000	1.00000
		Political Strength [a]	*str*	0.62023	0.48535	0.00000	1.00000
		Population (log)	*pop*	8.78210	1.23730	6.59441	14.99599
		Unemployment	*une*	4.07509	2.15610	0.30000	21.60000

Notes: (CSI): Difference between net short-term receivables, liquidity and net short-term liabilities; (LI): Liquidity divided by net short-term liabilities; (NSI): Difference between the receivables from current budget resources and the budget obligations from non-financial current expenditures, reduced by annual amortization payment –including interest and principal; (TVFCI): Taxable budgetary receivables divided by annual amortization payment – interest and principal –; (FII): Budgetary payables divided by budgetary receivables except grants; (NFBRI): Current budgetary payables, non-financial capital budgetary payables divided by non-financial current budgetary receivables, non-financial capital budgetary receivables; (SIG): Takes the value of 0 if the municipal government has a conservative ideology and a value of 1 if it is left-leaning. (STR): Takes the value of 0 if the municipal government shares power with other parties, and the value of 1 if it has an absolute majority.
a) refers to dummy variables from 0 to 1

To do so, and as observed previously, we examined two multinomial models, the first containing a multinomial regression pool, regardless of the effect of time, and the second showing the estimated coefficients in terms of marginal effects, instead of the exponential value of the estimated random effects multinomial logit model.

As indicated earlier, for both models, and in all cases, these estimated coefficients should be compared with the base category of the non adoption of a NPM delivery form. Thus, Tables 2 and 3 present the marginal effects, together with the levels of statistical significance.
Both models confirm that the worse a municipality's fiscal stress, the greater the probability of its changing the way in which services are managed, toward contracting out and/or inter-municipal cooperation. This is confirmed by the negative relationship between these management forms and the indicators of flexibility, sustainability, independence and liquidity. The other two forms of management, agencification and public firms, therefore, seem to be positively related to most of the indicators of fiscal stress, although not to the level of statistical significance. Accordingly, these formulas are used when there is a situation of good financial health. These outcomes imply, in terms of public management, that the policy decisions adopted by public authorities are not applied to the sphere of horizontal decentralisation processes—agencification and the creation of public companies formulated under NPM. On examination of models 1 and 2, it can be seen that model 2, on the whole, provides greater predictive capacity, with a Pseudo R^2 value of 16.11% (even higher than the value obtained, for example, by Zullo, 2009 and Hefetz and Warner, 2012, in which many more factors were considered).

Table 2: NPM delivery form (Marginal effects)

dy/dx (%)

Element of the financial condition	Indicator		Model: Mlogit							
			Contracting Out		Agencification		Public Firms		Inter-municipal Cooperation	
Probabilities observed in the sample			5.56%		0.61%		1.05%		9.62%	
Short-run solvency	Cash Surplus Index	*csi*	-0.1620		0.0349		0.0618		-0.0253	
	Liquidity Index	*li*	-0.4103	**	0.1919	**	-0.0345		0.3037	
Budgetary solvency	Net Savings Index	*nsi*	-2.2290		0.4519		0.3696		-0.7544	
Flexibility	Taxable Value divided by Financial Charge Index	*tvfci*	0.0190		0.0084		0.0002		-0.0334	*
Independence	Financial Independence Index	*fii*	-7.9261	***	0.8065	**	0.2280		-7.8710	***
Sustainability	Non-Financial Budgetary Results Index	*nfbri*	-5.9290	***	1.0520		0.6390		-0.8267	**
Control variables	Political Orientation [b]	*sig*	-0.8108	**	-0.0205		-0.2572		2.0863	***
	Political Strength [b]	*str*	0.5023		0.2658	**	0.2198		1.0813	**
	Population (*log*)	*pop*	4.2693	***	0.4343	***	0.9176	***	2.5814	***
	Unemployment	*une*	0.2182	***	-0.0464		-0.0597		1.2024	***

Base category:	No NPM delivery form adopted
Observations:	**14148**
Municipalities:	**n.a.**
Pseudo-R2:	0.1067
Log likelihood:	**-9242.164**

Notes: (CSI): Difference between net short-term receivables, liquidity and net short-term liabilities; (LI): Liquidity divided by net short-term liabilities; (NSI): Difference between the receivables from current budget resources and the budget obligations from non-financial current expenditures, reduced by annual amortization payment –including interest and principal; (TVFCI): Taxable budgetary receivables divided by annual amortization payment – interest and principal –; (FII): Budgetary payables divided by budgetary receivables except grants; (NFBRI): Current budgetary payables, non-financial capital budgetary payables divided by non-financial current budgetary receivables, non-financial capital budgetary receivables; (SIG): Takes the value of 0 if the municipal government has a conservative ideology and a value of 1 if it is left-leaning. (STR): Takes the value of 0 if the municipal government shares power with other parties, and the value of 1 if it has an absolute majority.
*** , ** , * Significant at 1%, 5%, and 10% probability level, respectively.
a) dy/dx is for discrete change of dummy variable from 0 to 1

Table 3: NPM delivery form (Marginal effects)

dy/dx (%)

Element of the financial condition	Indicator		Model: Gllamm							
			Contracting Out		Agencification		Public Firms		Inter-municipal Cooperation	
Probabilities observed in the sample			5.56%		0.61%		1.05%		9.62%	
Short-run solvency	Cash Surplus Index	*csi*	-0.1796		0.0280		0.0519		-0.0046	
	Liquidity Index	*li*	-0.4388	**	0.1703	*	-0.0208		0.3724	
Budgetary solvency	Flexibility — Net Savings Index	*nsi*	-2.5168	*	0.4621		0.4301		-0.2848	
	Flexibility — Taxable Value divided by Financial Charge Index	*tvfci*	0.0124		0.0084		-0.0007		-0.0392	**
	Independence — Financial Independence Index	*fii*	-7.0673	***	0.7220	*	0.1559		-6.8098	***
	Sustainability — Non-Financial Budgetary Results Index	*nfbri*	-5.3929	***	0.9618		-0.5698		-0.9684	**
Control variables	Political Orientation [b]	*sig*	-0.9214	***	-0.0376		-0.2677	*	1.7991	***
	Political Strength [b]	*str*	0.4560		0.2319	**	0.2116		1.1162	**
	Population (*log*)	*pop*	4.1402	***	0.4272	***	0.8897	***	2.7774	***
	Unemployment	*une*	0.1705	**	-0.0471		-0.0632	*	1.2284	***

Base category:	No NPM delivery form adopted
Observations:	**14148**
Municipalities:	**1572**
Pseudo-R2:	0.1611
Log likelihood:	**-9192,654**

Notes: (CSI): Difference between net short-term receivables, liquidity and net short-term liabilities; (LI): Liquidity divided by net short-term liabilities; (NSI): Difference between the receivables from current budget resources and the budget obligations from non-financial current expenditures, reduced by annual amortization payment –including interest and principal; (TVFCI): Taxable budgetary receivables divided by annual amortization payment – interest and principal –; (FII): Budgetary payables divided by budgetary receivables except grants; (NFBRI): Current budgetary payables, non-financial capital budgetary payables divided by non-financial current budgetary receivables, non-financial capital budgetary receivables; (SIG): Takes the value of 0 if the municipal government has a conservative ideology and a value of 1 if it is left-leaning. (STR): Takes the value of 0 if the municipal government shares power with other parties, and the value of 1 if it has an absolute majority.

*** , ** , * Significant at 1%, 5%, and 10% probability level, respectively.

a) dy/dx is for discrete change of dummy variable from 0 to 1

The results obtained indicate that during this period, municipalities, when faced with fiscal stress, opt for inter-municipal cooperation and outsourcing, i.e., measures that seek cost savings through economies of scale. These results are in line with those obtained by Hefetz and Warner (2012) for US municipalities.

As for the likelihood of a municipality choosing these forms of management on the basis of the different factors included in the model, from the results for model 2, we see that of the two indicators reflecting the cash position, only liquidity (LI) is a factor that increases the likelihood of outsourcing being adopted. There is also a significant relationship between this variable and agencification, although it is positive, which means an increase of one unit in the variable LI increases the probability of creating agencies by 0.191. In terms of the political implications of these results, public management in situations of cash surplus favour the creation of agencies, but when there are cash flow problems, municipalities tend to contract out services or seek inter-municipal cooperation formulas.

NSI also presents a significant negative relation with respect to the option of outsourcing. This means that when the local authority reports a negative value for this indicator of debt limitation, it will prefer to delegate services to a private operator. The indicator of debt repayment capacity (TVFCI) only shows a significant negative relation with inter-municipal cooperation. Therefore, the indicators related to the level of debt and the implementation of constraints also influence changes toward the contracting out of services and toward inter-municipal cooperation. These results link the local authority's decisions with the economic arguments found in the academic literature that relate limitations on debt access to outsourcing (Bel and Fageda, 2007).

The fourth element of fiscal stress analysed is the proportion of its income with which the municipality finances its expenditure, i.e. the

level of independence. The results in this respect show that the lower the level of inter-governmental subsidies received, the more likely municipalities will be to opt for outsourcing (-7.06) and inter-municipal cooperation (-6.80), while the other options obtain values of less than 1. This is the element that most contributes to increasing the probability of a change toward contracting out or inter-municipal cooperation. This implies that the policy decisions on outsourcing and cooperation are strongly influenced by the amount of transfers received from all other administrations. These results concur with those obtained in previous studies (Bel and Fageda, 2007; Rodrigues et al., 2012).

Finally, we analyse the indicator of sustainability, or budget deficit. Again, it is the options of outsourcing and of inter-municipal cooperation that show significant negative relations with the variable. Thus, when there is a budget deficit, municipalities tend to prefer outsourcing (5.39) and inter-municipal cooperation (0.96), although they are much more likely to adopt the first of these options. Therefore, the decision of the authority to outsource services is significantly influenced by the existence of a budget deficit.

Agencification and the creation of public firms are not related to periods of fiscal stress. Furthermore, decisions to adopt these methods of horizontal decentralisation are usually taken in periods of economic boom, and this applies especially to the creation of agencies when the municipality has a higher level of transfers and liquidity.

Political variables, too, can influence certain forms of service management, especially in the choice of inter-municipal cooperation. Thus, the political orientation indicator shows that a change of ruling party toward one with a progressive ideology reduces the likelihood of outsourcing (-0.92), while the adoption of inter-municipal cooperation is favoured by such a change (1.80). These results validate Hypothesis 5, namely that left-wing parties prefer management formulas based on the

public sector, and do not wish to include private operators in the management of municipal services. With respect to political strength, the existence of an absolute majority in local government increases the likelihood of their creating agencies and, even more so (1.11), the probability of inter-municipal cooperation being established. This implies that local governments in which inter-party pacts are not needed choose to cooperate with other municipalities or to create organisms under their own control. With respect to the political implications of these results, we conclude that councils with absolute majorities have less difficulty in reaching agreements to render services in conjunction with other public authorities.

To test the final hypothesis, we measured whether the municipality's population and the local level of unemployment influenced decisions on the forms of service management. In the case of the first factor, the proposed relation that the smaller the population, the greater the probability of a change in service provision, is not fulfilled. On the contrary, we observed a positive relation in this respect. Thus, larger municipalities tend to change toward formulas based on outsourcing (4.14) and inter-municipal cooperation (2.77), with the options of agencification and public firms achieving a coefficient of less than 1. This may be due to the fact that less populated municipalities do not have qualified management personnel and are unable to use NPM formulas (Balaguer-Coll et al., 2007). In the case of the unemployment variable, this increases in direct proportion with the adoption of outsourcing (0.17) and inter-municipal cooperation (1.22), especially the latter option. This may be because the municipalities with the highest rates of unemployment are in rural areas or are relatively small. In view of their limited resources, therefore, options based on cooperation between municipalities are preferred, in order to improve the cost structure (Warner, 2006).

6. CONCLUSIONS AND DISCUSSION

Fiscal stress is one of the main variables included in models seeking to identify the factors that explain why municipalities outsource their services. However, no in-depth study has previously been made of this variable. Various theories predict that the presence of fiscal stress can provoke changes in the structures by which local authority services are provided, aimed at cost savings and thus reduced levels of fiscal stress. But what approaches are most commonly taken to achieve this goal? Earlier studies have only considered the possibility of outsourcing, but there are other means that municipalities can employ to reduce fiscal stress. Therefore, in this paper, we consider these alternative approaches, examining their impact on management changes, not only regarding outsourcing to a private operator, but also on the choice of other forms of management, such as agencification, inter-municipal cooperation and public firms.

A further contribution made by this study is its use of a panel data methodology, which had not been previously considered for this type of study. This, together with the use of multilogic, enables the application of the random-effects panel multinomial logit model (PMLM) and enhances our understanding of the mechanism relating situations of fiscal stress with changes in forms of service provision. Thus, we incorporate the temporal dimension of the phenomenon under study, and demonstrate its utility by testing it against a multinomial (pool) model which does not include any consideration of time.

The results obtained show that different factors of fiscal stress influence the various ways of delivering public services. Moreover, in times of fiscal stress, municipalities are more likely to outsource their services and to participate in forms of inter-municipal cooperation (thus, hypotheses H_1 and H_4 are confirmed). This finding corroborates

the existence of a relation between the decision-making process by public authorities and the NPM that advises the use of these formulas.

Another important finding is the influence of funding received from other organisms. This variable is essential for a municipality to adopt a different way of managing its services, and is of particular importance to the process of outsourcing, followed by inter-municipal cooperation. Another key factor is the budget deficit (especially total budget shortfalls) which increases the likelihood of outsourcing, especially, being adopted, while the current account deficit has more influence on the choice of inter-municipal cooperation. In addition, our model introduces the municipality's short-term cash position, which is found to be significant for those that choose to outsource. These results indicate that studies of fiscal stress and changes in public service management formulas should address financial variables other than those strictly related to the access to debt and taxes.

Regarding the political variables, we note that conservative parties are more likely to introduce outsourcing and inter-municipal cooperation. The municipality's population and level of unemployment are also factors that are positively associated with outsourcing and inter-municipal cooperation.

Our study reveals that in times of fiscal crisis, municipalities opt for methods such as outsourcing and inter-municipal cooperation, which ratifies one of the major assumptions of NPM, but only as regards the application of techniques based on the business environment and strategic objectives. Agencification and public firms are the options least often adopted in situations of fiscal stress, which is in accordance with post-NPM postulates, under which excessive numbers of agencies and public companies increase the cost of administration. This result is particularly relevant to the present financial crisis; thus, if fiscal stress is being experienced, municipalities should not adopt agencification or

the creation of public firms (hence hypotheses H_2 and H_3 are rejected), but rather should seek to achieve service provision by private companies, and/or inter-municipal cooperation. The fact that the latter option is, in fact, the most commonly adopted may be explained by the structure of Spanish municipalities, most of which are small and therefore less attractive to private operators.

In conclusion, the results obtained reflect the correspondence between the decisions made by local public managers, on the one hand, and public policies adopted by the central administration, on the other, to resolve a situation of municipal fiscal crisis. In Spain, the central government is currently preparing a package of measures to change the ways in which municipalities manage their services, favouring the introduction of privatization in municipalities of over 20,000 inhabitants when they are unable to otherwise ensure an acceptable quality of service, and the adoption of intermunicipal cooperation among smaller municipalities. Proposals have also been made, in line with the results presented in this paper, to reduce the number of autonomous agencies and of local public companies[5].

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[5] The basic contents that seeks reform can be found at the following address http://www.lamoncloa.gob.es/ConsejodeMinistros/Referencias/_2013/refc20130215.htm#AdmonLocal

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APPENDIX

Table 4. Elements of fiscal stress and political control variables

Elements of the Financial Condition	Indicators	Definition
Short-run solvency	Cash Surplus Index (CSI)	Difference between net short-term receivables, liquidity and net short-term liabilities
Short-run solvency	Liquidity Index (LI)	Liquidity divided by net short-term liabilities
Budgetary solvency — Flexibility	Net Savings Index (NSI)	Difference between the receivables from current budget resources and the budget obligations from non-financial current expenditures, reduced by annual amortization payment – including interest and principal
Budgetary solvency — Flexibility	Taxable value divided by Financial Charge Index (TVFCI)	Taxable budgetary receivables divided by annual amortization payment – interest and principal –
Budgetary solvency — Independence	Financial Independence Index (FII)	Budgetary payables divided by budgetary receivables except grants.
Budgetary solvency — Sustainability	Non-Financial Budgetary Result Index (NFBRI)	Current budgetary payables, non-financial capital budgetary payables divided by non-financial current budgetary receivables, non-financial capital budgetary receivables.
Control variables	Political Orientation	Takes the value of 0 if the municipal government has a conservative ideology and a value of 1 if it is left-leaning.
Control variables	Political Strength	Takes the value of 0 if the municipal government shares power with other parties, and the value of 1 if it has an absolute majority.
Control variables	Population (log)	Logarithm of the number of inhabitants corresponding to each of the eight years covered between 2002 and 2009.
Control variables	Registered unemployment	Number of unemployed registered in the Public State Employment Service (formerly INEM) in each municipality, divided by the potential labour force (aged 15 to 64 years)

Table 5: Correlation matrix

			CSI	LI	NSI	TVFCI	FII	NFBRI	POP	UNE
Short-run solvency		Cash Surplus Index CSI	1							
		Liquidity Index LI	0.n ***	1						
Budgetary solvency	Flexibility	Net Savings Index NSI	0.172 ***	0.157 ***	1					
		Taxable Value divided by Financial Charge Index TVFCI	0.078 ***	0.073 ***	0.269 ***	1				
	Independence	Financial Independence Index FII	0.133 ***	0.126 ***	0.288 ***	0.085 ***	1			
	Sustainability	Non-Financial Budgetary Results Index NFBRI	0.188 ***	0.146 ***	0.380 ***	0.033 ***	0.365 ***	1		
Control variables		Population (log) POP	0.01	0.00	-0.087 ***	-0.174 ***	0.289 ***	0.002	1	
		Unemployment UNE	-0.033 ***	-0.054 ***	-0.163 ***	-0.039 ***	-0.260 ***	-0.016	0.216 ***	1

*** , ** , * Significant at 1%, 5%, and 10% probability level, respectively.

Table 6: Two-sample t-test with equal variances

Element of the financial condition	Indicator	Mean dummy = 0 (a)	Mean dummy = 1 (b)	Differences (a) - (b)	Ha: (a)-(b)≠0 p-value
Contracting Out					
Short-run solvency	Cash Surplus Index	3.53405	3.75210	-0.21806	0.895
	Liquidity Index	2.22892	2.38678	-0.15786	0.923
Budgetary solvency	Flexibility — Net Savings Index	0.08277	0.07865	0.00411	0.375
	Flexibility — Taxable Value divided by Financial Charge Index	37.15134	16.14707	21.00427	0.242
	Independence — Financial Independence Index	0.57046	0.66151	-0.09105	0.000
	Sustainability — Non-Financial Budgetary Results Index	1.02638	1.02343	0.00294	0.572
Control variables	Political Orientation	0.57745	0.53360	0.04385	0.002
	Political Strength	0.62490	0.56680	0.05811	0.000
	Population (*log*)	8.66636	10.10464	-1.43828	0.000
	Unemployment	4.03341	4.55130	-0.51789	0.000
Agencification					
Short-run solvency	Cash Surplus Index	3.56903	1.96563	1.60341	0.711
	Liquidity Index	2.25743	0.80397	1.45346	0.735
Budgetary solvency	Flexibility — Net Savings Index	0.08263	0.06435	0.01828	0.133
	Flexibility — Taxable Value divided by Financial Charge Index	35.72953	11.05369	24.67584	0.600
	Independence — Financial Independence Index	0.57714	0.63685	-0.05970	0.000
	Sustainability — Non-Financial Budgetary Results Index	1.02646	0.99720	0.02926	0.032
Control variables	Political Orientation	0.57373	0.59064	-0.01691	0.657
	Political Strength	0.62190	0.46784	0.15407	0.000
	Population (*log*)	8.77069	9.81909	-1.04840	0.000
	Unemployment	4.07584	4.00702	0.06882	0.678

			Public Firms			
Short-run solvency		Cash Surplus Index	3.55706	3.24244	0.31462	0.927
		Liquidity Index	2.25127	1.69583	0.55543	0.871
Budgetary solvency	Flexibility	Net Savings Index	0.08248	0.07967	0.00281	0.771
		Taxable Value divided by Financial Charge Index	35.83398	14.36301	21.47097	0.565
	Independence	Financial Independence Index	0.57666	0.64160	-0.06493	0.000
	Sustainability	Non-Financial Budgetary Results Index	1.02626	1.01958	0.00667	0.539
Control variables		Political Orientation	0.57480	0.52381	0.05099	0.091
		Political Strength	0.62090	0.58242	0.03848	0.194
		Population (*log*)	8.75983	10.04184	-1.28201	0.000
		Unemployment	4.07322	4.18059	-0.10736	0.415
			Intermunicipal Cooperation			
Short-run solvency		Cash Surplus Index	2.87446	9.93321	-7.05876	0.000
		Liquidity Index	1.58744	8.40688	-6.81944	0.000
Budgetary solvency	Flexibility	Net Savings Index	0.08184	0.08806	-0.00622	0.147
		Taxable Value divided by Financial Charge Index	37.08703	20.13773	16.94930	0.306
	Independence	Financial Independence Index	0.57236	0.62897	-0.05661	0.000
	Sustainability	Non-Financial Budgetary Results Index	1.02462	1.04050	-0.01588	0.001
Control variables		Political Orientation	0.56867	0.62334	-0.05467	0.000
		Political Strength	0.62201	0.60345	0.01856	0.158
		Population (*log*)	8.74946	9.08966	-0.34020	0.000
		Unemployment	4.11048	3.74151	0.36897	0.000

a) Refers to dummy variables from 0 to 1
***, **, * Significant at 1%, 5%, and 10% probability level, respectively.

CHAPTER 3: OPERACIONES FUERA DE PRESUPUESTO -*OFF BUDGET*-, FACTORES POLÍTICOS Y DEUDA MUNICIPAL: UN ESTUDIO EMPÍRICO APLICANDO UNA METODOLOGÍA DE DATOS DE PANEL

CHAPTER 3: OPERACIONES FUERA DE PRESUPUESTO -*OFF BUDGET*-, FACTORES POLÍTICOS Y DEUDA MUNICIPAL: UN ESTUDIO EMPÍRICO APLICANDO UNA METODOLOGÍA DE DATOS DE PANEL

Abstract

Attempts to overcome borrowing restrictions imposed on local authorities have led public managers to create instrumental bodies by means of which certain levels of debt are not included in the municipal budget. The aim of the present study is to determine whether the creation of agencies, public enterprises or consortia, or the outsourcing of high-cost public services, together with relevant political and financial aspects, are relevant to local authority borrowing requirements. In this study, various databases are employed to construct a panel of 1,517 municipalities for the period 2003-2008 to determine which of these factors are most influential on municipal debt in Spain. The results obtained from the application of fixed-effects panel data methodology show that financial variables and population size influence municipal borrowing, and these authorities presenting a greater number of outsourcing operations and of consortia tend to have lower levels of debt.

Keywords: Local government, debt, local finance, delivery forms, political factors, panel data.

Resumen

El intento de superar las restricciones al endeudamiento impuestas a los ayuntamientos lleva a los gestores públicos a la creación de entes instrumentales que permitan al ayuntamiento no computar en su presupuesto determinados niveles de deuda. El objetivo del presente trabajo es determinar si la creación de agencias, empresas públicas, consorcios o la externalización de servicios que tienen un alto costo para los ayuntamientos, junto con los aspectos políticos y financieros de la entidad, son factores que condicionan que el ayuntamiento presente un determinado nivel de deuda. Para ello, utilizando diferentes bases de datos, se estudia sobre un panel de 1,517 municipios para el período 2003-2008 cuáles de estos factores influyen sobre la deuda de los municipios españoles. Tras la aplicación de una metodología de datos de panel de efectos fijos, los resultados muestran que las variables financieras y la población influyen en el nivel de deuda del municipio, y que los ayuntamientos que presentan un mayor número de externalizaciones y de participación en consorcios obtienen un menor nivel de deuda.

Palabras clave: Hacienda local, endeudamiento, situación financiera, formas de gestión, factores políticos, datos de panel.

1. INTRODUCCIÓN

Durante las últimas décadas se han desarrollado una serie de estudios encaminados hacia la determinación de los factores que caracterizan el nivel de endeudamiento en las administraciones locales (Pogue, 1970; Inman, 1990; Kiewiet y Szakaly, 1996). Bajo el marco teórico del federalismo fiscal, el principal argumento que sustenta estos trabajos es el control del endeudamiento de las corporaciones locales. En el ámbito de la Unión Europea, a consecuencia de la actual crisis económica y financiera, este mecanismo se ha acentuado debido a la exigencia de los gobiernos centrales de un mayor control sobre el déficit público y sobre el nivel de endeudamiento de las administraciones públicas. Desde una perspectiva teórica, se ha justificado el uso de diferentes instrumentos para llevar a cabo el control del endeudamiento local, con la intención de garantizar el equilibrio financiero a largo plazo (Lane, 1993; Poterba, 1997), preservar el principio de igualdad en el reparto del gasto ocasionado por la deuda entre diferentes generaciones (equidad intergeneracional) (Musgrave y Musgrave, 1989) y minimizar el uso de la deuda como instrumento político para evitar el uso excesivo de impuestos a sus ciudadanos - teoría de la ilusión fiscal- (Cabasés et al., 2007).

Pero los gestores públicos locales intentan buscar fórmulas para escapar de dichas limitaciones al endeudamiento, aunque desde la administración pública se haya hecho un importante esfuerzo en los últimos años por desarrollar las herramientas que permitan recoger este tipo de operaciones (Brusca, 2010). Una de estas fórmulas para superar los límites del endeudamiento es la creación de entes instrumentales -organismos autónomos, empresas públicas, consorcios o externalizaciones de servicios a operadores privados- con la intención

de no imputar en el presupuesto de la entidad local la deuda, desviándola a estos organismos, sobre los que recae la misma. Son las denominadas operaciones fuera de presupuesto -off-budget operations- (Blewet, 1984).

Junto a este aspecto, existen otros que pueden ejercer cierta influencia sobre el nivel de deuda, aspectos de naturaleza política como son el signo del partido político que gobierna (Abrams y Dougan, 1986; Misiolek y Elder, 1988; Monasterio y Suárez-Pandiello, 1993; Tellier, 2006) y la fortaleza del gobierno local (*weak government hipothesis*) (Ashworth et al., 2005; Cabasés et al., 2007). Por último, también existen un conjunto de hipótesis en relación con la situación financiera y fiscal de la entidad local que pueden condicionar el uso del recurso al endeudamiento (Benito-López et al., 2009; Benito-López et al., 2010).

Todo lo anterior proporciona un amplio y complejo marco teórico para explicar el comportamiento de los niveles de deuda en las administraciones locales, poniendo especial énfasis en el estudio del uso, por parte de los ayuntamientos, de instrumentos que permitan evitar las restricciones al endeudamiento -operaciones fuera de presupuesto- que, hasta la fecha, tal y como indican Bastida et al. (2013), ha recibido poca atención por parte de los investigadores. En este sentido, con este trabajo se quiere contribuir a avanzar en el conocimiento de los factores determinantes del endeudamiento en el ámbito local, incorporando variables hasta ahora no tratadas suficientemente en investigaciones previas, mediante la aplicación de metodologías de datos de panel.

El presente trabajo está organizado como sigue. En la segunda sección, se detalla el marco teórico seguido para el análisis de los factores que pueden condicionar el nivel de deuda de los ayuntamientos -limitaciones al endeudamiento, operaciones *off-budget*, factores políticos- presentando las hipótesis para cada uno de los postulados

establecidos. En la tercera sección, que aborda el estudio empírico, hace referencia a las características de la muestra y la fuente de los datos para la obtención de todas las variables consideradas, así como a los instrumentos estadísticos y modelo econométrico planteado para la consecución del objetivo del trabajo. La cuarta sección se ocupa del análisis de los resultados del estudio empírico y, por último, en la quinta parte se señalan las principales conclusiones.

2. FACTORES DETERMINANTES DEL ENDEUDAMIENTO EN LAS ADMINISTRACIONES LOCALES: MARCO TEÓRICO

La búsqueda para conocer los motivos que llevan a los ayuntamientos a aumentar sus niveles de deuda se ha estructurado a través de un conjunto de teorías con la intención de modelar el comportamiento de esta variable de endeudamiento. Con carácter general, el endeudamiento a largo plazo se solicita para llevar a cabo inversiones en activo fijo, mientras que el endeudamiento a corto plazo se concierta para atender las necesidades transitorias de tesorería. Sin embargo, los municipios siempre han intentado desarrollar mecanismos que les permitan obtener un mayor nivel de endeudamiento (Samuelson, 1988; Escudero, 2002). Por este motivo, los gobiernos regionales o estatales han intentado evitar un uso indiscriminado y excesivo de este recurso por parte de los políticos locales. Como ya se ha apuntado, los motivos para este control pueden encontrarse en diferentes marcos teóricos basados en la literatura sobre federalismo fiscal (Poterba y Rueben, 1999; Tanzi, 1995, 2001; Rossi y Dafflon, 2002), entre los que destacan: la equidad intergeneracional, cuyo objetivo es preservar a las generaciones futuras su derecho a un adecuado nivel de vida evitando que las generaciones actuales recurran al endeudamiento de forma excesiva (Letelier, 2011); la búsqueda del equilibrio financiero a largo plazo, posiblemente motivado por la mermada capacidad tributaria que pueden presentar los gobiernos

locales, debido a que no tienen acceso a los impuestos de mayor capacidad recaudatoria y por la influencia de otros factores como los cambios de municipios que pueden realizar sus residentes para buscar localidades donde la presión fiscal sea menor, o criterios de estabilidad macroeconómica del país y que tienen repercusión sobre los gobiernos subcentrales y locales (Messere, 1993; Bosch y Suárez-Pandiello, 1994).

Este soporte teórico proporciona la posibilidad de considerar un primer conjunto de tres hipótesis que concretamos a continuación:

En primer lugar, a la hora de estudiar el endeudamiento local, el principal motivo para su aparición son las inversiones de capital. En este sentido, desde los postulados de la teoría de la equidad intergeneracional, el uso de deuda para la financiación de las inversiones encuentra su justificación en el traspaso a las generaciones futuras de parte del costo debido a que ellas también se beneficiarán de las mismas (Cabasés et al., 2007; Letelier, 2011). Esta variable es analizada en diferentes estudios como indicadora del esfuerzo inversor (Zehms, 1991; Benito-López y Bastida, 2005). Así, la primera hipótesis sería:

H_1: El nivel de inversión de capital está relacionado positivamente con el nivel de endeudamiento.

La implantación de medidas por parte de los gobiernos estatales y regionales para la limitación de la deuda se debe, además de a las razones antes mencionadas, a las restricciones presupuestarias que afectan a las administraciones locales (Cabasés et al., 2007). Estas restricciones se han acentuado en los últimos años como consecuencia de la crisis financiera, tal como indican las últimas publicaciones que analizan la situación financiera de las entidades locales para el caso español (Benito-López et al., 2009; Zafra-Gómez et al., 2009a; Zafra-Gómez et al., 2009b; Zafra-Gómez et al., 2009c; Benito-López et al.,

2010). A este respecto, como señala Ezquiaga (2004), una entidad local será más solvente o dispondrá de una mayor sostenibilidad cuando sea capaz de: a) Limitar la deuda viva y alargar el plazo de la misma para que se equipare al plazo de las inversiones; b) Aumentar el ahorro bruto, o bien, disminuir las partidas de gastos corrientes o aumentar las de ingresos de esa misma naturaleza.

Así, a la hora de llevar a cabo nuevas inversiones, las principales alternativas de financiación de un ayuntamiento son los recursos propios o el endeudamiento. En el primer caso, la cobertura de la nueva inversión se produce a través del margen entre ingresos corrientes - principalmente de carácter tributario- y gastos de naturaleza corriente no financieros, reducida por el importe de la carga financiera –principal e intereses-, lo que se podría denominar ahorro neto. En el caso del endeudamiento, esta fuente de financiación externa se convierte en un elemento clave de la situación financiera de la entidad. De esta forma, si un ayuntamiento posee reducidos o negativos niveles de ahorro neto, para llevar a cabo las nuevas inversiones, sustituirá la ausencia de recursos propios por la vía del endeudamiento, sin traspasar a sus ciudadanos vía impuestos, el costo de tales adquisiciones, trasladando a éstos, de esta forma, una situación virtual, algo ficticia, sobre el costo de los servicios que presta la entidad (Abrams y Dougan, 1986; Misiolek y Elder, 1988; Oates, 1988; Estévez, 1992). Si los ingresos tributarios son los adecuados, pero la entidad no posee ahorro neto positivo, esta situación puede deberse a un elevado nivel de gasto corriente, por lo que, igualmente, deberá de acudir al recurso del endeudamiento. Por lo tanto una segunda hipótesis relacionada con la teoría de la ilusión fiscal y con las restricciones presupuestarias de la entidad sería:

H_2: *Niveles reducidos o negativos de ahorro neto favorecerán un aumento de la deuda de la entidad local.*

En concreto, atendiendo a las distintas causas por las que un ayuntamiento puede presentar un bajo ahorro neto o incluso negativo esta hipótesis puede concretarse en dos subhipótesis:

H_{2a}: Insuficientes ingresos tributarios conllevarán un aumento del endeudamiento local.

H_{2b}: Elevados gastos corrientes conllevarán un aumento del endeudamiento local.

Del mismo modo, resulta necesario determinar el nivel de dependencia de la entidad local respecto a la financiación recibida del exterior a través de transferencias y subvenciones obtenidas (González y Salvador, 1996; Benito-López y Bastida, 2005). En este sentido, cabe esperar que cuanto mayor sea el nivel de transferencias, ya sea corrientes o de capital, recibidas por la entidad local, menor será la necesidad de ésta de acudir al crédito para atender sus niveles de gasto público. Así, una nueva hipótesis sería:

H_3: Los ingresos por transferencias corrientes y de capital presentarán una relación negativa con el nivel de endeudamiento de la entidad local.

Un segundo conjunto de teorías que explicarían el nivel de endeudamiento están relacionadas con las características políticas de los gobiernos locales. Concretamente, el ciclo político y su influencia en el comportamiento económico se han estudiado en numerosos países (Rogoff y Sibert, 1988; Rogoff, 1990; Schuknecht, 2000; Shi, y Svensson, 2006; Brender y Drazen, 2005; Gonçalves y Veiga, 2007; Gámez e Ibarra-Yúnez, 2009). En este contexto, en el marco de la teoría de los ciclos políticos, se han desarrollado dos vertientes, como señalan Gámez e Ibarra-Yúnez (2009); la primera de ellas, más orientada hacia la conducta oportunista de los gobiernos, trata de analizar cómo los ciclos políticos influyen en las decisiones financieras y fiscales de los

ayuntamientos (Rogoff, 1990; Gonçalves y Veiga, 2007) y la segunda, la vertiente ideológica (*partisan*), según la cual se pueden observar diferencias en las políticas económicas y de gasto en función del partido que gobierna (Cusack, 1997; Alesina et al., 1999; Magaloni, 2000). En relación con esta segunda vertiente, en el presente estudio se presta atención a la variable ideología política para determinar su influencia en las decisiones de endeudamiento. Así, diversos autores consideran que los partidos progresistas favorecen el aumento del gasto público y, por lo tanto, del nivel de deuda, mientras que los partidos conservadores defienden las reducciones del presupuesto y por lo tanto, deberían de presentar menores niveles de deuda (Tufte, 1978; Hibss, 1987; Seitz, 2000; Tellier, 2006; León et al., 2010). En este sentido, formulamos la siguiente hipótesis:

H_4: Los municipios donde gobiernan partidos políticos con una ideología de izquierdas presentarán una relación positiva con el nivel de deuda.

La segunda variable a analizar dentro de los factores políticos se refiere a la presencia o no de un gobierno de coalición o de mayoría absoluta. De los diferentes estudios que han tratado este aspecto, es destacable el modelo teórico desarrollado por Ashworth et al. (2005), en el que se estima que una elevada fragmentación en el gobierno supone una mayor posibilidad de que en el largo plazo crezcan tanto el gasto como la deuda pública. Este hecho tiene su justificación en las concesiones que los gobiernos tienen que hacer a las minorías para conseguir apoyo, lo que produce un incremento del gasto público y, por lo tanto, del endeudamiento (Salinas y Álvarez, 2002; León et al., 2010). Asimismo, este argumento encuentra sustento en los resultados encontrados por Hagen y Vabo (2005) quienes observaron que los gobiernos con una menor fragmentación logran superávits presupuestarios en contraposición a aquellos en los que la fragmentación resulta elevada.

A diferencia de los trabajos mencionados anteriormente, Benito-López y Bastida (2008) y Guillamón et al. (2011) ponen de relieve que a menor fragmentación política mayor es el gasto de la entidad local. En esta misma línea se pronuncian Gonçalves y Veiga (2007) al considerar que en gobiernos con mayoría absoluta resulta más fácil la aprobación de presupuestos que conllevan déficits en el año electoral.

No obstante, Alesina y Rosenthal (1994) observaron una escasa influencia de la fragmentación política en las políticas fiscales. Del mismo modo, Jones et al. (1997) consideran que los gobiernos fragmentados llevan aparejados pequeños cambios presupuestarios.

En vista de lo anterior no se puede establecer, a priori, una relación positiva o negativa de esta variable con el endeudamiento local, por lo que la hipótesis quedaría planteada del siguiente modo:

H_5: Los gobiernos locales fragmentados –sin mayoría absoluta– presentarán una relación positiva/negativa con el nivel de endeudamiento.

El tercer bloque de argumentos teóricos se encuentra relacionado con las estrategias de los políticos para evitar los límites del endeudamiento. En este sentido, uno de los instrumentos más utilizados es el denominado en la literatura como operaciones fuera de presupuesto –*off-budget*–. Estas operaciones consisten en el aumento de la deuda de la corporación, pero imputando la misma a entes instrumentales que asumen la prestación de determinados servicios del ayuntamiento, tales como organismos autónomos, empresas públicas, consorcios, además del uso de mecanismos de externalización de servicios que suponen un alto coste, asumiendo estas entidades, o en el caso de la externalización, el operador privado, la deuda que el ayuntamiento no quiere reflejar en su presupuesto y cuentas anuales.

Sin embargo, los trabajos que han tratado de estudiar si la creación de este tipo de entes provoca una disminución del costo de los servicios, muestran resultados dispares. Esta situación puede deberse al hecho de que estos estudios no han tenido en cuenta el retardo que la decisión de cambiar la forma de gestión puede tener sobre la variable estudiada. Concretamente, los trabajos de Bel y Fageda (2007) y González-Gómez y Guardiola (2009) señalan que los estudios desarrollados hasta la fecha evalúan el año en el que el ayuntamiento toma la decisión de externalizar y el *financial stress* o nivel de deuda en el mismo año. En este sentido, estos autores recomiendan introducir un retardo entre el momento en que se descentraliza/externaliza y el momento en el que surten los efectos sobre la variable a estudiar. En este sentido, se incorpora en las formas de gestión de servicios evaluadas una variable que recoge el número de entidades creadas en el momento *t,* entendiendo éste como el momento en el que se evalúa la deuda del ayuntamiento y, por otro lado, el número de entidades creadas en el momento *t-1,* período anterior al instante en que se evalúa el nivel de deuda.

Con todo lo anterior, en primer lugar se analiza el proceso de descentralización a través de la creación de organismos autónomos (agencias) y empresas públicas. Estas formas han sido objeto de estudio en diferentes contextos internacionales. Concretamente, los trabajos de Bennett y DiLorenzo, (1982); Blewet (1984); Bunch (1991) y Von Hagen (1991) han confirmado que los ayuntamientos han desviado deuda a sus agencias saltándose las limitaciones impuestas por los gobiernos regionales o estatales. En este sentido, puede plantearse la siguiente hipótesis teniendo en cuenta el retardo que presenta tal decisión sobre el nivel de deuda:

H6: El nivel de endeudamiento aumenta conforme lo hace el número de organismos autónomos y empresas públicas entre el ejercicio actual (t) y en el anterior (t-1).

Las formas de gestión descentralizadas mencionadas se utilizan, la mayoría de las veces, en ayuntamientos de cierto tamaño. Sin embargo, los ayuntamientos de menor tamaño optan por agruparse entre ellos -a través de la denominada cooperación intermunicipal, que principalmente adopta la fórmula de consorcio- para prestar servicios que son muy costosos y podrían desviar la deuda hacia este tipo de entidades. En este mismo sentido se manifiestan Bel y Fageda (2006) al analizar el uso que los municipios pequeños pueden hacer de la cooperación intermunicipal para producir de forma eficiente servicios locales. La principal hipótesis que se analiza es que los pequeños municipios pueden utilizar la cooperación intermunicipal para explotar economías de escala (Warner y Hefetz, 2003; Dijkgraff et al., 2003; Warner, 2006a; Warner, 2006b; Zullo, 2009). Por este motivo, si la cooperación implica un menor gasto implicará un nivel de deuda menor para el ayuntamiento, de ahí que pueda existir una relación negativa entre el número de consorcios en los que participa el ayuntamiento y su nivel de deuda. En este sentido, la séptima hipótesis quedaría formulada como sigue:

H_7: El incremento de la cooperación intermunicipal entre el ejercicio actual (t) y en el anterior (t-1) conducirá a la obtención de economías de escala y a una disminución de los niveles de endeudamiento.

La tercera de las opciones consiste en la disminución de los niveles de endeudamiento de los ayuntamientos mediante procesos de externalización (Yarrow, 1986; Hebdon y Jalette, 2008). Concretamente, la literatura sobre externalización señala que un motivo para llevarla a cabo sería la búsqueda de ahorro en costos para ser más eficientes (Bel y Fageda, 2007). En este sentido, serán los servicios que presenten un mayor costo los que tenderán a externalizarse, es decir, aquéllos que requieran un mayor número de activos fijos y, en consecuencia, mayores niveles de deuda, por lo que cabría esperar que el signo de esta variable en relación con la dependiente fuera negativo. Sin embargo,

estudios recientes señalan que esta situación puede no darse debido a la existencia de contratos incompletos, que no son capaces de recoger los costos de transacción, es decir, costos que no han sido posible estimar en la negociación de los contratos, por lo que el ahorro en costos realmente se vería compensado por éstos, y el ayuntamiento podría incluso incurrir en mayores gastos y, por lo tanto, en mayores niveles de deuda (Levin y Tadelis, 2005; Brown et al., 2008).

Con todo lo anterior, la octava hipótesis se plantearía de la siguiente forma teniendo igualmente en cuenta el retardo de los efectos sobre la deuda:

H8: El nivel de endeudamiento aumenta/disminuye conforme aumenta/disminuye el nivel de externalización de servicios que lleve a cabo el ayuntamiento entre el ejercicio actual (t) y en el anterior (t-1).

Por último, incorporamos como variable de control el tramo poblacional donde el ayuntamiento se encuentra ubicado ya que, tal como demuestran los estudios previos, existe una relación positiva y significativa entre el tamaño poblacional y el nivel de deuda del ayuntamiento (Hempel, 1973; Farnham, 1985; Rivers y Yates, 1997; Pettersson-Lidbom, 2001; Ashworth et al., 2005; Benito-López y Bastida, 2008).

3. METODOLOGÍA PARA EL ANÁLISIS DE DATOS DE PANEL DE LA DEUDA VIVA EN LOS AYUNTAMIENTOS. APLICACIÓN AL CASO ESPAÑOL

3.1. DATOS, VARIABLES Y CARACTERÍSTICAS DE LA DEUDA LOCAL ESPAÑOLA

Para cumplir con los objetivos planteados en este trabajo, se utiliza un panel de datos de 1,517 ayuntamientos españoles, empleando el dato de la deuda viva desde el año 2003 a 2008 proporcionado por el Ministerio de Economía y Hacienda.

En cuanto a la regulación legal del endeudamiento en España, debemos de señalar los requisitos y límites del endeudamiento local regulados en el Texto Refundido de la Ley de Haciendas Locales (TRLHL) que se recogen en el Cuadro 1, donde podemos apreciar el distinto tratamiento normativo según se trate de una operación de crédito a corto plazo o a largo plazo o, si se trata de una operación de financiación extraordinaria.

Cuadro 1. Requisitos y limitaciones de las operaciones de crédito en el TRLHL

		Créditos a corto plazo	Créditos a largo plazo
Requisitos previos		• Aprobación del presupuesto para el ejercicio en curso (art. 50 TRLHL) • Informe previo de la Intervención (art. 52 TRLHL)	
		• Atender las necesidades transitorias de tesorería (art. 51 TRLHL)	• Financiación de inversiones y sustitución total o parcial de las operaciones preexistentes (art. 49.1 TRLHL)
Límites y condiciones al endeudamiento		Cumplimiento del principio de estabilidad presupuestaria[6] (art. 53.7 TRLHL)	
		Las Leyes de **Presupuestos Generales del Estado** podrán fijar **anualmente** límites de acceso al crédito de las entidades locales (art. 53.9 TRLHL)	
		• 30 % de ingresos liquidados por operaciones corrientes en el ejercicio anterior (art. 51 TRLHL) • Si la operación se realiza en el primer semestre del año sin que se haya producido la liquidación del presupuesto de tal ejercicio, se tomará en consideración la liquidación del ejercicio anterior a este último (art. 51 TRLHL)	Aprobación por el Ministerio o de la Comunidad Autónoma: • Cuando el ahorro neto sea negativo (art. 53.1 TRLHL) • Cuando el volumen total del capital vivo de las operaciones de crédito vigentes a corto y largo plazo, incluyendo el importe de la operación proyectada, exceda del 110% de los ingresos corrientes liquidados o devengados en el ejercicio inmediatamente anterior (art. 53.2 TRLHL) • Municipios de más de 200.000 habitantes: no necesitan dicha aprobación si presentan un escenario de presupuestación consolidada (art. 53.4 TRLHL)
		Aprobación por el Ministerio (art. 53.5 TRLHL): • Operaciones de crédito en el exterior • Instrumentadas con emisiones de deuda	
		Financiación excepcional[7] (art. 177.5 TRLHL)	
		• Importe total anual no supere el 5% de los recursos por operaciones corrientes del presupuesto de la entidad. • Carga financiera total de la entidad no supere el 25 por ciento de los expresados recursos.	

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[6] A este respecto, tanto el artículo 25 del Real Decreto 1463/2007 como el artículo 23 del Real Decreto Legislativo 2/2007 recogen las diferentes opciones que tienen las entidades locales en caso de incumplimiento del principio de estabilidad presupuestaria en lo que a acceso al crédito se refiere.

[7] En este sentido, ha sido aprobada el Real Decreto Ley 5/2009, debido a la situación económica actual que está ocasionando retrasos en el pago de las obligaciones contraídas por las entidades locales.

Como variables independientes para el contraste de las hipótesis se han utilizado diferentes tipos de indicadores que permiten determinar el efecto de las diferentes variables sobre el nivel de deuda viva.

Las variables explicativas de la dimensión poblacional y de la situación financiera interna de los municipios se detallan en el Cuadro 2, donde se observa la metodología empleada para el cálculo de los diferentes indicadores, así como el signo esperado de los mismos.

Cuadro 2: Indicadores de la dimensión poblacional y de la situación financiera

Concepto	Definición	Signo Esperado
Ln (POP)	La variable población ha sido introducida en el modelo en términos logarítmicos para reducir su variabilidad	+
Gastos de Capital No Financieros (GCNF)	$\sum$ Cap. VI y VII del Presupuesto de Gastos	+
Índice de Ingresos Fiscales (IIF)	$\dfrac{\sum \text{Cap. I al III del Presupuesto de Ingresos}}{\sum \text{Cap. I al V del Presupuesto de Ingresos}}$	-
Índice de Subvenciones (IS)	$\dfrac{\sum \text{Cap. IV y Cap. VII del Presupuesto de Ingresos}}{\sum \text{Total de Ingresos}}$	-
Índice de Ahorro Neto (IAN)	$\dfrac{(\sum \text{Cap. I al V del Presupuesto de I} - \sum \text{Cap. I, II,III IV, IX del Presupuesto de Gastos})}{\sum \text{Cap. I al V del Presupuesto de Ingresos}}$	-
Superávit/Déficit No Financiero (SDNF)	$\dfrac{\sum \text{Cap. I al VII del Presupuesto de Ingresos}}{\sum \text{Cap. I al VII del Presupuesto de Gastos}}$	-

Fuente: Clasificación económica consolidada, Liquidación presupuestaria 2003-2008, Oficina virtual de Entidades Locales.

En relación con las variables políticas, el Cuadro 3 explica la metodología seguida para agrupar los partidos en la alcaldía según los conceptos citados anteriormente. A partir de la formulación de las definiciones se han realizado las estimaciones oportunas para determinar la influencia que tiene el signo político en la definición de la deuda viva de los municipios españoles. Los datos utilizados hacen referencia a los procesos electorales municipales de los años 2003 y 2007.

Cuadro 3: Signo político

Concepto	Definición
Conservador Variable dicotómica, valor=0	Bajo este grupo se han incluido los siguientes partidos políticos: Partido Popular (PP); Coalición Canaria (CC); Convergència i Unió (CiU); Euzko Alderdi Jeltzalea-Partido Nacionalista Vasco (EAJ-PNV); Partido Aragonés (PAR); Unión del Pueblo Navarro (UPN); Unió Valenciana (UV); Partido Nacionalista Canario (PNC), etcétera.
Progresista Variable dicotómica, valor=1	En este grupo se han incluido a los siguientes partidos: Partido Socialista Obrero Español (PSOE); Izquierda Unida (IU); Bloque Nacionalista Galego (BNG); Esquerra Republicana de Catalunya (ERC), Izquierda Unida Comunidad de Madrid (IUCM); Partit dels Socialistes de Catalunya-Progrés Municipal (PSC-PM); Partido Socialista de Andalucía (PSA); Partido Andalucista (PA); Chunta Aragonesista (CHA); Iniciativa per Catalunya Verds (ICV); Asamblea de Izquierdas (A-IZ), etcétera.

Fuente: Ministerio del Interior y elaboración propia.

Asimismo, se ha usado la variable dicotómica "Fortaleza Política" que ha tomado el valor de uno en el caso de que el partido en el poder obtuviese mayoría absoluta en las elecciones municipales y de cero en el caso de que hubiese formado coalición.

En el Cuadro 4 se definen las variables utilizadas como indicadores de los niveles de cooperación, descentralización y externalización de los municipios españoles y el signo a esperar en las estimaciones que se realicen.

Cuadro 4: Indicadores de cooperación intermunicipal, entes descentralizados y externalización

Concepto	Definición	Signo Esperado
EXT_w	La variable externalización de servicios públicos recoge el número de externalizaciones entre el momento t (año evaluado) y el anterior a éste. Los valores extremos han sido tratados mediante la técnica de la "winsorización[8]".	+/-
ED_w	La variable "Entes Descentralizados" incorpora aquellos organismos autónomos locales, administrativos, comerciales, empresas públicas y entidades públicas empresariales creados entre el año evaluado y el anterior a éste. Los valores extremos han sido tratados mediante la técnica de la "winsorización".	+
COOP_d	La variable "Cooperación Intermunicipal" determina si el municipio objeto de estudio entra a formar parte de un consorcio entre el año evaluado y el anterior a éste. Esta variable se ha construido como una variable dicotómica.	-

Fuente: *Oficina virtual de Entidades Locales y Boletín Oficial de la Provincia.*

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[8] Este procedimiento ha sido desarrollado entre otros por Barnett y Lewis (1994) y Tukey (1962). Con esta técnica se sustituyen los valores extremos (superiores e inferiores) por los valores más próximos situados por debajo o por encima de los mencionados.

En cuanto a la fuente de los datos se refiere, se han utilizado las siguientes bases de datos:

1) Para conocer las diferentes variables financieras y el nivel de deuda viva [9] se consultó la Oficina Virtual de Coordinación Financiera de Entidades Locales del Ministerio de Economía y Hacienda (DGCFCAEL) (http://serviciosweb.meh.es/apps/EntidadesLocales/). Allí puede obtenerse acceso a las bases de datos que contienen la información sobre la clasificación económica del presupuesto de gastos y de ingresos de los ayuntamientos para el período 2003-2008.

2) La segunda base de datos consultada, contiene la información relativa a las formas de gestión utilizadas por los ayuntamientos y también está elaborada por la DGCFCAEL a través de su oficina virtual (https://serviciostelematicos.dgcfel.meh.es/BDGEL/aspx/). Concretamente, aporta información acerca de las formas utilizadas de cooperación intermunicipal (consorcios), así como de las formas utilizadas para llevar a cabo procesos de descentralización (organismos autónomos, empresas públicas y entidades públicas empresariales).

3) Una tercera base de datos recoge toda la información relativa a los factores políticos. Esta base de datos recoge los resultados de las elecciones de 2003 y 2007, en relación con el signo del partido político que gobierna, el número de concejales y si gobierna en coalición o en solitario. Esta base es proporcionada por el Ministerio del Interior.

4) Por último, y dado que la base de datos anterior relativa a las formas de gestión no refleja si el servicio se encuentra externalizado, se contrataron los servicios de una empresa

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[9] El dato de la deuda viva disponible en la Oficina Virtual de Coordinación Financiera con las Entidades Locales se refiere a 31 de diciembre de 2009. Para obtener el resto de valores para esta variable hasta 2003 hemos ajustado el dato de partida a través de la variación neta de pasivos financieros consolidada entre el ayuntamiento y sus organismos autónomos.

dedicada a la recogida y análisis de información financiera para que, a través de una búsqueda por los Boletines Oficiales de la Provincia (BOP), elaboraran una base de datos que recogiera los anuncios publicados en el BOP por los ayuntamientos que optaron por la contratación externa de servicios. En la misma se recoge el año de externalización, la duración de la misma, la existencia de canon en algunos casos, así como una descripción de las condiciones y la entidad adjudicataria.

Con todo lo anterior, se elaboró una base de datos ampliamente contrastada, contando con un número muy elevado de ayuntamientos y de entidades y características económicas y políticas, repartidos por toda la geografía española. Las estadísticas descriptivas se muestran en el apéndice del presente trabajo.

3.2. INSTRUMENTOS ESTADÍSTICOS Y MODELO ECONOMÉTRICO

La metodología empleada para contrastar las hipótesis formuladas es la de datos de panel. Un conjunto de datos es de panel cuando se dispone de una muestra formada por observaciones repetidas a lo largo del tiempo para un conjunto de unidades individuales (en este caso los municipios de la geografía española); es decir, se dispone de un vector de variables para N unidades a lo largo de T períodos: x_{it} para $i=1...N$ y $t=1...T$.

La dimensión temporal enriquece la estructura de los datos y es capaz de aportar información que no aparece en un único corte. Algunas de las ventajas respecto a conjuntos de datos de tipo

tradicional (series temporales o corte transversal) son ampliamente conocidas (Hsiao, 1985; Klevmarken, 1989; Solon, 1989)[10]:

-La posibilidad de controlar la heterogeneidad inobservable. Hay que tener en cuenta que los individuos son heterogéneos y que cada uno tiene un comportamiento particular; por lo tanto, siempre hay características que influyen en las decisiones financieras y que son difíciles de medir y de obtener, y consecuentemente no se determinan en los modelos.

-Los datos de panel son capaces de identificar y medir efectos que no son detectables en las series temporales o de corte transversal.

-Los datos de panel permiten modelar respuestas rápidas con microdatos.

-Mediante esta metodología se eliminan los sesgos resultantes de la agregación de entidades o individuos.

-Suelen ofrecer un número prácticamente ilimitado de grados de libertad y reducen la multicolinealidad, de ahí que mejore la eficiencia del modelo.

En primer lugar, con la intención de poner de manifiesto las ventajas que presentan los modelos de panel tienen frente a otro tipo de estimaciones, hemos aplicado un modelo de regresión lineal múltiple (conocido como Modelo Pool) para el conjunto de las 9,102 observaciones correspondientes a los 1,517 municipios para los que fue posible obtener el valor de las variables seleccionadas durante los seis años de estudio.

En general, se estiman tanto el modelo pool como los modelos de panel de efectos fijos o aleatorios para, posteriormente, mediante

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[10] Literatura citada en Baltagi (1995).

contrastes de hipótesis, decidir cuál de los modelos estimados se ajusta mejor a los datos de la muestra (Hansen y Bruce, 1999). Para determinar si es aconsejable utilizar el modelo pool frente a un modelo de panel se emplea una Prueba F, cuya hipótesis nula es que los coeficientes de regresión son constantes e iguales para todos los individuos y que, por lo tanto, el comportamiento de la variable dependiente se explica igualmente bien con el modelo pool que con los modelos de panel, en los que se supone que los coeficientes de las variables explicativas no son constantes sino que varían entre individuos. También se emplea la prueba de Breusch y Pagan para determinar si el modelo de efectos aleatorios es mejor que el modelo pool. La siguiente cuestión que se plantea es que en el caso de que tanto el modelo de efectos aleatorios como el de efectos fijos sean mejores que el modelo pool, ¿cómo decidir cuál de los dos usar? La respuesta a esta cuestión es la prueba de Hausman, que compara las estimaciones del modelo de efectos fijos y el de efectos aleatorios. Si encuentra diferencias sistemáticas (se rechaza la hipótesis nula de igualdad, es decir, se obtiene un valor de la prueba alto y un p-valor bajo) y siempre que estemos medianamente seguros de la especificación, podremos entender que continúa existiendo correlación entre el error y los regresores ($Cov(X_{it}, u_{it}) \neq 0$) y es preferible elegir el modelo de efectos fijos.

Con todo lo anterior, la siguiente etapa consiste en llevar a cabo la especificación del modelo tanto de efectos fijos como de efectos aleatorios, de la siguiente forma[11]:

$$lnDV_{it} = \beta_0 + \beta_1 lnPOP_{it} + \beta_2 IIF_{it} + \beta_3 IS_{it} + \beta_4 SDNF_{it} + \beta_5 lnGCNF_{it} + \beta_6 IAN_{it} + \beta_7 EXT\_w_{it} + \beta_8 ED\_w_{it} + \beta_9 COOP\_d_{it} + \eta_i + v_{it}$$

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[11] El modelo de efectos aleatorios tiene la misma especificación que el de efectos fijos con la salvedad de que η_i, en lugar de ser un valor fijo para cada individuo y constante a lo largo del tiempo es una variable aleatoria con un valor medio η_i y una varianza $Var(\eta_i) \neq 0$. Es decir la especificación del modelo es igual a: $y_{it} = \beta_0 + \beta X_{it} + \eta_i + v_{it}$, salvo que ahora η_i es una variable aleatoria.

Donde:

-*i* denota el municipio evaluado y *t* el año.

-Variable dependiente: logaritmo neperiano de deuda viva (DV).

-Variables independientes: logaritmo neperiano de la población (POP); índice de ingresos fiscales (IIF); índice de subvenciones (IS); superávit/déficit no financiero (SDNF); gastos de capital no financieros (GCNF); índice de ahorro neto (IAN); externalizaciones (EXT_w); entes descentralizados (ED_w), pertenencia del municipio a un consorcio (COOP_d).

-η_i es un término inobservable que refleja diferencias inobservables entre individuos (también llamado efecto individual).

- v_{it} es el término de error.

Asimismo, los estadísticos descriptivos de las variables empleadas en el panel de datos y la matriz de correlaciones aparecen recogidos en la tabla 5 (Apéndice).

4. ANÁLISIS DE LOS RESULTADOS[12]

En las Tablas 1, 2 y 3 se ofrecen respectivamente los resultados obtenidos de las estimaciones realizadas mediante el modelo de regresión tradicional completo (pool), el modelo de efectos fijos y el de efectos aleatorios.

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[12] Las estimaciones se han realizado con el programa Stata 10.0

Tabla 1 : Modelo Pool

Variable dependiente: LnDV			
	Coef.	**Std. Err.**	**t**
lnPOP	0,8396307***	0,0130145	64,52
IIF	-0,8967464***	0,1040476	-8,62
IS	-2,6434580***	0,0958277	-27,59
SDNF	0,1205004**	0,0506474	2,38
lnGCNF	0,3139686***	0,0118689	26,45
IAN	-1,1095730***	0,0568394	-19,52
SIG	-0,0085611	0,0164802	-0,52
FOR	-0,0975562***	0,0173786	-5,61
EXT_w	-0,0355781**	0,0157319	-2,26
ED_w	0,1297266***	0,0348188	3,73
COOP_d	-0,0576169***	0,0215570	-2,67
CONS	4,1550690***	0,1559231	26,65
R²	81,22%		
F	3573,41***		

*p<0,1; **p<0,05; ***p<0,01
Fuente: Elaboración propia.

Tabla 2: Modelo de Efectos Fijos (Fixed Effects)

	Variable dependiente: LnDV		
	Coef.	**Std. Err.**	**t**
lnPOP	0,6734825***	0,0680137	9,90
IIF	-0,7549703***	0,0876334	-8,62
IS	-0,9906636***	0,0640815	-15,46
SDNF	-0,0711132***	0,0266348	-2,67
lnGCNF	0,1000306***	0,008214	12,18
IAN	-0,1463915***	0,0338158	-4,33
SIG	0,0145298	0,0151052	0,96
FOR	0,0109915	0,0148449	0,74
EXT_w	-0,0217272**	0,0105838	-2,05
ED_w	0,024573	0,0194692	1,26
COOP_d	-0,0463438***	0,0117092	-3,96
CONS	7,906731***	0,6064778	13,04

R²	78,61%
σ$_u$	0,9479702
σ$_e$	0,35251439
ρ	0,87851725
F	23,49***

*p<0,1; **p<0,05; ***p<0,01
Fuente: Elaboración propia.

Tabla 3: Modelo de Efectos Aleatorios (Random Effects)

	Coef.	Std. Err.	Z
Variable dependiente: LnDV			
lnPOP	1,0613340***	0,015831	67,04
IIF	-0,4335184***	0,0813765	-5,33
IS	-1,2424380***	0,063503	-19,57
SDNF	-0,0502812*	0,0270517	-1,86
lnGCNF	0,1233320***	0,0081622	15,11
IAN	-0,2435245***	0,0340514	-7,15
SIG	0,0146855	0,0144758	1,01
FOR	-0,0125030	0,0143779	-0,87
EXT_w	-0,0199688*	0,0105653	-1,89
ED_w	0,0418514**	0,0196991	2,12
COOP_d	-0,0417854***	0,0118887	-3,51
CONS	4,0593890***	0,1530294	26,53

R²   79,49%
σ$_u$ 0,6411859
σ$_e$ 0,35251439
ρ   0,76789372
Wald X²   8803,79***
Test LM de Breusch y Pagan: $X^2(1)=12305,98$***

*p<0,1; **p<0,05; ***p<0,01
Fuente: Elaboración propia.

Las pruebas de Breusch y Pagan para efectos aleatorios, y la prueba F de significancia de los efectos fijos nos indican que tanto el modelo de efectos aleatorios como el de efectos fijos son mejores que el modelo pool y, por lo tanto, se concluye que los coeficientes de regresión no son constantes y se estiman mejor con un modelo de panel.

En la Tabla 4 se ofrecen los resultados obtenidos mediante la aplicación de la prueba de Hausman, de la que se rechaza la hipótesis nula de igualdad, es decir, los estimadores difieren y, en consecuencia, es más conveniente la estimación mediante efectos fijos.

Tabla 4: Test de Hausman

	(b) fijos	(B)	(b-B) Diferencia	Sqrt (diag(V_b-V_B)) S.E.
Coeficientes				
lnPOP	0,6734825	1,061334	-0,3878513	0,0661456
IIF	-0,7549703	-0,4335184	-0,3214519	0,0325189
IS	-0,9906636	-1,242438	0,2517739	0,008591
SDNF	-0,0711132	-0,0502812	-0,020832	.
lnGCNF	0,1000306	0,123332	-0,0233014	0,0009207
IAN	-0,1463915	-0,2435245	0,097133	.
SIG	0,0145298	0,0146855	-0,0001557	0,0043149
FOR	0,0109915	-0,012503	0,0234945	0,0036943
EXT_w	-0,0217272	-0,0199688	-0,0017584	0,0006263
ED_w	0,024573	0,0418514	-0,0172784	.
COOP_d	-0,0463438	-0,0417854	-0,0045585	.

$X^2(11)=(b-B)'[(V\_b-V\_B)^{(-1)}](b-B)=1156,55$

Prob> $X^2=0,0000$

Fuente: Elaboración propia.

Así pues, con base en los contrastes efectuados, se ha realizado el análisis utilizando el modelo de efectos fijos. En este modelo las variables explicativas resultan ser significativas en 78.61 por ciento, es decir, este porcentaje representa la capacidad explicativa atribuible únicamente a las variables incluidas en el modelo, que son las que determinan el nivel de endeudamiento de los municipios evaluados (Véase Tabla 2).

Los resultados de este modelo de efectos fijos confirman que la variable población influye positiva y significativamente en el nivel de deuda viva, cumpliéndose así las hipótesis propuestas por Ashworth et al. (2005), Benito-López y Bastida (2008), Farnham (1985), Hempel (1973), Rivers y Yates (1997) y Pettersson-Lidbom (2001).

Respecto a las magnitudes financieras internas (IIF, IS, SDNF, lnGCNF, IAN) se muestra que todas estas variables han resultado ser significativas. Así, las variables índice de ingresos fiscales, índice de subvenciones, índice de ahorro neto y superávit/déficit no financiero, presentan una correlación negativa con la variable de estudio, lo que supone que el aumento de estas variables implica una reducción de la necesidad de acudir al endeudamiento. De hecho, la variable con mayor capacidad explicativa ha resultado ser el índice de subvenciones. Por su parte, la variable lnGCNF -Gastos de Capital no Financieros- presenta un coeficiente positivo y estadísticamente significativo, coincidiendo con los resultados de Benito-López y Bastida (2005) y Zehms (1991).

En cuanto a los factores políticos, se muestra que no han resultado significativos. En relación con la variable signo político, el resultado del presente estudio viene a confirmar lo indicado por Benito-López y Bastida (2004): "la ideología política no afecta al nivel de deuda pública municipal". Sin embargo, la variable fortaleza política presenta una relación positiva con el nivel de deuda viva municipal, lo que pone de relieve que, a menor fragmentación política mayor es el gasto del organismo local, tal y como sugerían Benito-López y Bastida (2008), Guillamón et al. (2011) y Pérez-López et al. (en prensa) para el caso español. No obstante, como se ha indicado, este resultado no resulta significativo en el modelo estimado.

En relación con los coeficientes relacionados con las formas de gestión de los servicios públicos locales, se ha obtenido una relación negativa y significativa entre los procesos de externalización y los niveles de endeudamiento de las entidades locales, estando nuestros resultados en la línea de lo indicado por Yarrow (1986) y Hebdon y Jalette (2008). Este hecho implica que al aumentar el número de externalizaciones llevadas a cabo por un ayuntamiento, disminuye la deuda viva de la corporación, síntoma de que las externalizaciones se

habrán realizado en aquéllos servicios que requieren mayores niveles de deuda.

Del mismo modo, la relación entre deuda y cooperación intermunicipal también ha resultado ser negativa; por lo tanto, los municipios que optan por esta forma de gestión pueden llegar a alcanzar menores niveles de deuda municipal.

Por último, se observa que en el modelo desarrollado, aquellos municipios que descentralizan su gestión en el año objeto de estudio y en el anterior, presentan mayores niveles de deuda viva consolidada, lo que puede deberse a que en el cómputo de esta magnitud se incluye el valor de la deuda proporcionada por los organismos autónomos y las sociedades mercantiles participadas de forma directa o indirecta por la entidad local, aunque esta variable no ha resultado ser estadísticamente significativa.

5. CONCLUSIONES

El control del endeudamiento mediante la implantación de restricciones a los ayuntamientos es un mecanismo introducido por la administración central o regional con la intención de evitar el abuso que determinados gestores públicos locales puedan hacer del mismo y que cuya efectividad e importancia adquiere hoy en día una mayor dimensión debido a la actual situación de crisis económica, la cual exige un mayor control sobre la deuda del conjunto de las administraciones. Ante la existencia de este tipo de restricciones los gestores públicos locales intentan desarrollar fórmulas para evitar que éstas los afecten mediante el traspaso de deuda desde el presupuesto de la entidad local a organismos descentralizados, consorcios o mediante procesos de externalización, siendo este último uno de los más efectivos pero no analizado suficientemente en las investigaciones. Junto al estudio de este fenómeno, el presente trabajo también ha

tratado de aportar evidencias sobre otros aspectos que también influyen sobre la deuda local –situación financiera y factores políticos–, con una metodología de datos de panel.

Así pues, a partir de la literatura previa, se han establecido una serie de hipótesis encaminadas a determinar si la deuda viva se encuentra influenciada por un conjunto de variables que reflejen la situación financiera interna de la entidad, factores de naturaleza política y determinadas formas de gestión de los servicios públicos locales, lo que supone un avance en el conocimiento de los factores determinantes de la deuda al considerar la creación de entes instrumentales para disminuir el nivel de deuda soportada directamente por el ayuntamiento. Para ello, a partir de una muestra de 1,517 ayuntamientos para el período 2003-2008, se realiza una estimación a través de un modelo con datos de panel de efectos fijos mostrando que ocho de las variables independientes utilizadas han resultado significativas.

En relación con los indicadores referentes a la situación financiera interna municipal, los resultados están en línea con lo indicado por la literatura. Estas variables han resultado ser todas significativas. De hecho, la variable con mayor capacidad explicativa del nivel de endeudamiento es el índice de subvenciones.

De acuerdo con los factores de tipo político, se ha obtenido evidencia empírica de que no tienen una clara influencia sobre el endeudamiento público local.

Finalmente, en relación con las formas de gestión empleadas, la contratación externa de servicios públicos presenta una relación negativa con el nivel de endeudamiento. Por su parte, también se ha observado que los municipios que optan por la cooperación intermunicipal ven reducido su nivel de endeudamiento. Estos

resultados demuestran el cumplimiento de las hipótesis relacionadas con el uso de entes instrumentales para el desvío de deuda del presupuesto municipal y, concretamente, en la utilización de figuras que requieren de una mayor complejidad para el imputación de deuda a la administración local –cooperación intermunicipal- e incluso que evitan su reflejo en el presupuesto y cuentas anuales de la entidad – externalización-.

6. LIMITACIONES Y FUTURAS LÍNEAS DE INVESTIGACIÓN

Una de las líneas a investigar en futuros trabajos es la observación desde un punto de vista dinámico del efecto que los cambios en las formas de gestionar los servicios públicos -ya sea a través de la implementación de procesos de externalización, descentralización, creación de empresas públicas o el establecimiento de acuerdos de cooperación intermunicipal- ejercen en las decisiones de endeudamiento de las entidades locales. Debido a la naturaleza dinámica de estas actuaciones, Arellano y Bond (1991) y Arellano y Bover (1995) proponen la utilización de modelos con estimadores que empleen variables instrumentales para la corrección de la inconsistencia que presentan los métodos estáticos. Así, podríamos emplear estos métodos dinámicos para estudiar el efecto que la adopción del uso de medidas basadas en la Nueva Gestión Pública (NGP) tendrá sobre los niveles de endeudamiento.

Por otro lado, en el presente trabajo se ha puesto de manifiesto que las características políticas no tienen una clara relación con el nivel de endeudamiento local. En concreto, hemos analizado la fortaleza política y el signo o ideología política, esta última como parte de la vertiente ideológica de la teoría de los ciclos políticos. Sin embargo, la vertiente oportunista de los recursos públicos municipales no ha sido objeto de estudio, por lo que en futuras investigaciones se tratará de

analizar y estudiar, dentro de las variables políticas, si efectivamente el oportunismo conlleva un aumento del endeudamiento local.

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APÉNDICE

Tabla 5. Estadísticos descriptivos

Variables	2003		2004		2005		2006		2007		2008	
	Media	Desv. Típica	Media	Desv. Típica	Media	Desv. Típica	Media	Desv. Típica	Media	Desv. Típica	Media	Desv. Típica
lnDV	14,27	1,76	14,30	1,76	14,33	1,75	14,37	1,76	14,38	1,78	14,42	1,82
lnPOP	8,82	1,25	8,83	1,25	8,86	1,26	8,87	1,26	8,89	1,26	8,91	1,26
IIF	0,58	0,15	0,59	0,15	0,60	0,15	0,59	0,15	0,57	0,15	0,56	0,15
IS	0,44	0,17	0,42	0,17	0,42	0,17	0,43	0,17	0,45	0,17	0,46	0,16
SDNF	0,99	0,15	1,05	0,17	1,08	0,20	1,08	0,20	1,00	0,16	0,98	0,16
lnGCNF	14,13	1,34	13,99	1,33	14,12	1,30	14,35	1,31	14,47	1,30	14,34	1,32
IAN	0,05	0,18	0,08	0,17	0,10	0,15	0,13	0,16	0,10	0,14	0,05	0,15
SIG	0,53	0,50	0,53	0,50	0,53	0,50	0,53	0,50	0,57	0,50	0,57	0,50
FOR	0,62	0,49	0,62	0,49	0,62	0,49	0,62	0,49	0,59	0,49	0,59	0,49
EXT_w	0,23	0,57	0,24	0,58	0,23	0,58	0,23	0,58	0,23	0,57	0,26	0,61
ED_w	0,06	0,24	0,07	0,25	0,09	0,28	0,08	0,26	0,04	0,20	0,03	0,18
COOP_d	0,27	0,45	0,11	0,31	0,12	0,32	0,22	0,42	0,23	0,42	0,10	0,30

Fuente: Elaboración propia.

CHAPTER 4: REDUCING COSTS IN TIMES OF CRISIS: DELIVERY FORMS IN SMALL AND MEDIUM SIZED LOCAL GOVERNMENTS' WASTE MANAGEMENT SERVICES

CHAPTER 4: REDUCING COSTS IN TIMES OF CRISIS: DELIVERY FORMS IN SMALL AND MEDIUM SIZED LOCAL GOVERNMENTS' WASTE MANAGEMENT SERVICES

Abstract

The current economic crisis is increasingly affecting the public sector, requiring stricter control of deficits, and local administrations are not exempt from these requirements. Therefore, it is essential to consider management forms that may produce cost savings in the provision of public services. In this article we propose an evaluation of municipal waste collection and disposal services to determine whether single/joint or public/private municipal service provision, together with other factors including quality, political aspects, and the socio-economic environment, most contribute to reducing costs. The results obtained for the period 2002–08 show that joint management (intermunicipal cooperation) and public management (in relation to single and private management systems, respectively) have a greater effect on reducing the costs of this service. Thus, small and medium-sized local authorities can identify formulas for reducing costs and thus be in a better position to overcome the economic crisis.

1. INTRODUCTION

In recent decades, numerous studies have focused on how to achieve greater efficiency in the provision of public services (Boyne, 1996; Hodge, 2000; Bel et al., 2010; among others). Interest in this question has increased further with the current economic and financial crisis, the effects of which on public administration have been mainly reflected via a stricter control of budgets and deficits (López-Hernández et al., 2012). In view of this situation, it is necessary to reopen the debate regarding the search for greater efficiency, with particular emphasis on forms of public management that enable the costs of service provision to be reduced (Peters, 2011).

One of the principal ways by which greater efficiency can be achieved is by obtaining economies of scale. For smaller authorities, this can be done through inter-municipal cooperation, i.e., the joint management of services. The provision of local public services is becoming ever more complex and less financially sustainable (Fluvià et al., 2008), while at the same time it is subject to cost decentralization processes imposed by central government, and thus increased responsibilities (Rodríguez-Pose and Sandall, 2008). These factors, together with the current economic and financial crisis and the limited management capabilities that characterize this type of entity (Deller and Rudnicki, 1992), highlight the need to determine the optimum size for the provision of certain local public services, one based on maximizing economic rationality and enabling higher levels of efficiency to be obtained.

It is in this respect that we must address an initial question, one that has been widely debated in studies of public administration: what is the optimum organizational size for providing public services?

(Andrews and Boyne, 2009). The first major objective of the present study is to contribute to our understanding of this question. Could small and medium-sized local governments benefit more from providing waste collection services individually, or from working jointly in the form of inter-municipal cooperation?

Our second main goal is to determine whether the provision of local public services incurs higher levels of costs when they are provided through a public or a private agency. Supporters of the traditional Weberian model of public administration held that services should be provided through public agencies, in the belief that this type of bureaucracy would achieve higher levels of efficiency and rationality in pursuing its goals, resulting from unified management and the predictability and uniformity of the routines and processes carried out (Weber, 1992; Du Gay, 2000; Jørgensen, 2011). However, problems with this model of administration began to appear with growing acceptance of the Public Choice approach, under which centralized bureaucracies were viewed as monopolistic and inefficient by nature, suffering problems of coordination and control arising from their excessive size, as well as a lack of flexibility (Ostrom, 1973; Dahl and Tufte, 1974). These ideas subsequently gave rise to the development of New Public Management (NPM) and the ambition to create a more business-like and market-oriented administration, one promoting competition, a decentralized public sector, cost savings, and greater efficiency, thus superseding the Weberian notions of the classic public bureaucracy (Osborne and Gaebler, 1992). The results obtained from our study contribute to the debate on this issue and on the validity of NPM postulates, which have been questioned in recent years, and more so with the present worldwide economic crisis. In this respect, post-NPM (Christensen and Lægreid, 2008, 2011; Lodge and Gill, 2011) and neo-Weberian administration (Pollitt, 2009; Kuhlmann, 2010) ideas have been championed, with arguments in favour of re-centralizing the public sector. These theorists claim that the formulas employed under

NPM have given rise to problems of reduced efficiency, coordination, and control, as well as unnecessary overlapping in the provision of services.

Accordingly, we aim to determine which forms of management – single or joint, and public or private – provide optimal levels of cost and quality in the provision of waste collection and disposal services. The main reason for examining this fundamental service is its high cost for local administrations; for this same reason, it has been the object of many previous studies. This article differs from previous studies in its use of a new methodology, proposed by Plumper and Troeger (2007), for the analysis of panel data and in its examination of a broad time horizon, concluding with the onset of the present world economic crisis. We address six different means of service provision, among public and private formulas, and joint or single management options, and therefore the results achieved solidly justify the use of particular management options for reducing costs and for overcoming the economic crisis.

The rest of this article is structured as follows. In the following section, we review the principal theories that in one way or another have contributed to the debate on the best organizational structure or type for efficiently managing public services, and we formulate the fundamental hypotheses to be proposed. The third section begins with a brief review of the main studies made to evaluate waste management costs, and presents the data obtained, the methodology applied, and the results achieved. The fourth section presents the main conclusions drawn.

2. THEORETICAL FRAMEWORK AND DEVELOPMENT OF HYPOTHESES

The current economic crisis has spurred the debate on the optimal size and form of organizing public services, with diverse theories being proposed in favour of larger or smaller sizes in this respect.

Initially, it was held that the larger an organization, the greater the economies of scale would be produced, the more efficient and better coordinated would be the services provided, and the greater would be the facility for distributing services in the public interest rather than for the sake of private gain (Boyne, 1996). In particular, in local administrations, the 'big is beautiful' (Weberian Bureaucracy) idea became the predominant form of organization in the provision of public services. This notion was based on the belief that economies of scale are obtained when an organization reaches a given size (Goodsell, 1994; Boyne, 1995), and gave rise to the ambition to create ever-larger units, via the consolidation of metropolitan areas or through inter-municipal cooperation, with the goal of making better use of available resources (Boyne, 1995; Bel and Fageda, 2006). Those advocating Weberian-inspired classical bureaucracies would argue that smaller local authorities should amalgamate their activities –through intermunicipal cooperation, mainly using the formula of consortium or mancommunity– in the provision of particularly costly services. These options were examined by Bel and Fageda (2006), who analyzed the use smaller authorities might make of inter-municipal cooperation in order to provide local services more efficiently. Others, too, have considered that smaller authorities could make use of inter-municipal cooperation in order to exploit economies of scale (Dijkgraaf et al., 2003; Warner and Hefetz, 2003; Warner, 2006a, 2006b; Zullo, 2009). Such an approach could produce lower transaction costs than those arising

following privatization or the in-house provision of services by the local authority.

The contrary view is that of individual service provision by the local authority. Following Bel and Fageda (2010), we include in this category direct control by the local authority, or action via an autonomous organization (agency). In the latter case, services are provided by a public agency dependent on the local authority (although it has its own budget and organization) or by a public local-owned enterprise company (LOE), which is a mercantile company that may be 100 per cent owned by the local authority, or control may be exercised with a shareholding exceeding 50 per cent. All these formulas are options for single, individual management by the local authority.

Consideration of the above two options raises an initial question: in the current economic crisis, would it be advisable to develop broader-based municipal structures, in the form of joint service provision (i.e., inter-municipal cooperation), thus producing economies of scale and lower unit costs, or on the contrary, should services be provided individually by each local authority, thus obtaining lower costs? This question underlies our first hypothesis.

Hypothesis 1: *In small and medium-sized local authorities, service provision through joint management formulas will produce economies of scale and therefore lower costs than would service provision using individual formulas.*

It has also been argued that the cost of service provisions may be reduced by outsourcing them to the private sector. This focus arose with the development of theories of Public Choice and Property Rights (Niskanen, 1971; Savas, 1987; Shleifer, 1998), according to which the public production model is inefficient, and therefore market mechanisms should be introduced to create competition in service

provision and thus stimulate cost reductions. This benefit is achieved because external agents are capable of creating more flexible structures, and are subject to fewer restrictions than are public providers; they may share fixed costs among diverse geographic units and can introduce innovations to achieve cost savings (Donahue, 1989; Bel and Fageda, 2006). This theoretical framework was implemented as New Public Management (NPM) (Behn, 2003; Pollitt and Bouckaert, 2011). According to NPM, the provision of public services should be oriented towards the application of market techniques (Stark 2002). A common means of doing so is via the externalization, or outsourcing, of public services to improve effectiveness and efficiency (Osborne and Gaebler, 1992; Hood, 1995; Kleven et al., 2000; Peters, 2000; Van Helden and Jansen, 2003; Warner and Bel, 2008).

Under NPM, externalization is justified on diverse grounds; for example, to achieve cost reductions and thus greater efficiency (Bel and Fageda, 2010). However, others have argued that this cost reduction may be less than it appears, due to contract characteristics and specifications. It has been reported that these specifications tend to be incomplete, in that they do not reflect transaction costs, i.e., those which could not be estimated during the contract negotiation. Therefore, the expected cost savings could be reduced or cancelled out; indeed, the local authority might even be faced with higher subsequent costs (Levin and Tadelis, 2005; Brown et al., 2008). Minimizing the impact of transaction costs, therefore, is essential if effective cost savings are to be achieved by outsourcing. When the costs of maintaining the service within the organization are higher than those involved in externalizing it, transaction costs are lower and privatization produces cost savings (Sappington and Stiglitz, 1987). In addition to these concerns, researchers have detected a lack of coordination and control between local authorities and the companies contracted to provide the service; this could produce greater costs for the local authority because of the need to monitor the service after

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externalization (Bailey and Davidson, 1999). In some cases, there could occur a duplication of services offered, and then the cost of service production via externalization would be much higher than that of public provision. These postulates have been formulated in the management models known as post-NPM and neo-Weberian bureaucracy. In both cases, emphasis is placed on reducing fragmentation through structural integration, increased centralization, capacity building, enhanced coordination, strengthening central political and administrative capacities, asserting re-centralization and re-regulation, and cutting across organizational boundaries (Christensen and Lægreid, 2008; Pollitt, 2009; Kuhlmann, 2010).

Accordingly, our results may corroborate the provision of public services by means of private formulas, as advocated by NPM, or on the contrary, support public provision, in accordance with post-NPM postulates and those of neo-Weberian bureaucracy. Thus, we propose Hypothesis 2.

Hypothesis 2: *For small and medium-sized local governments, the cost of providing services is lower when private, rather than public management formulas, are adopted.*

The above considerations and our first two hypotheses are aimed at contributing to the current debate as to which model of management achieves lower cost levels (Andrews et al., 2009; Rosenbloom and Hahm, 2010). To date, conclusive findings have yet to be obtained concerning the existence or otherwise of a relationship between performance and management structures. In fact, prior research has not been able to show conclusively whether there exists a relationship at all between performance and the forms of organization in the public sector (Andrews et al., 2009). The need to obtain further information in this respect is highlighted by the current economic crisis, and so we

seek to determine the optimum provider size for local public services, as an aspect that could help local governments in the present situation (Andrews and Boyne, 2009).

However, it should not be forgotten that in all productive processes it is essential to accurately determine the quality of the services provided. In this sense, as observed by Montesinos and Brusca (2009), the key characteristics to implementing reforms in public management lie in the better use of resources and in achieving higher quality and better environmental management. In this respect, NPM postulates state that the adoption of these measures would produce increased efficiency, productivity, and quality. Thus, policies have been implemented to favour the achievement of higher quality services, via what has been labelled Total Quality Management (Diefenbach 2009, p. 899). It has been argued that the adoption of this approach enables improved organizational efficiency. However, studies of this question have produced differing conclusions (Boyne and Walker, 2002), and so the sign of the following hypothesis, at the outset, remains unclear.

Hypothesis 3: *Raising service quality will have an impact on costs.*

Nevertheless, these are not the only factors that may impact on the cost of services provided. Traditionally, studies have examined a set of external elements that influence the provision of local public services (Andrews et al., 2005; Lindblad, 2006). Deciding which external variables affect performance is normally done following the PESTEL model proposed by Johnson and Scholes (2002), and later adapted by Andrews et al. (2005) for the local public sector, through the SEEP framework, which includes social (S), economic (E), environmental (E), and political (P) factors. As observed by the latter authors, external factors do affect the performance of local governments and these factors must be detected and as far as possible, their effects isolated. Accordingly, we consider as control variables those which may affect the

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cost of the service, and for this purpose we analyze relevant socio-economic and political factors.

With regard to the political factors (Raudla, 2013), different authors have considered that left-wing parties tend to favour greater public spending while right-wing parties are assumed to defend budget reductions (Tufte, 1978; Hibbs, 1987; Seitz, 2000; Tellier, 2006). However, the results published in this respect remain inconclusive. Persson and Svensson (1989) believe that a conservative government might implement higher levels of spending if it expected to lose forthcoming elections, and lower levels when it expected to remain in power.

In addition to the above factor, we consider whether the existence of a coalition government or one with an absolute majority might affect levels of cost. Among the various studies that have addressed this question, let us highlight the theoretical model developed by Ashworth et al. (2005), who concluded that the existence of a coalition government favours the possibility of rising expenditure in the long term.

Finally, we take into account a series of socio-economic factors that may affect the cost of waste collection. The latter service is one of those most likely to be influenced by the social and economic characteristics of the municipality. Thus, for example, areas with a significant tourism industry have a much higher summer population, and this can significantly raise the costs of waste collection (Bel and Mur, 2009).

In order to illustrate the development of the hypotheses, figure 1 summarizes the forms of service delivery, the corresponding costs, the potential relationships among them, and the postulates on cost comparisons in previous studies.

Figure 1. Synthesis of the hypotheses to be tested
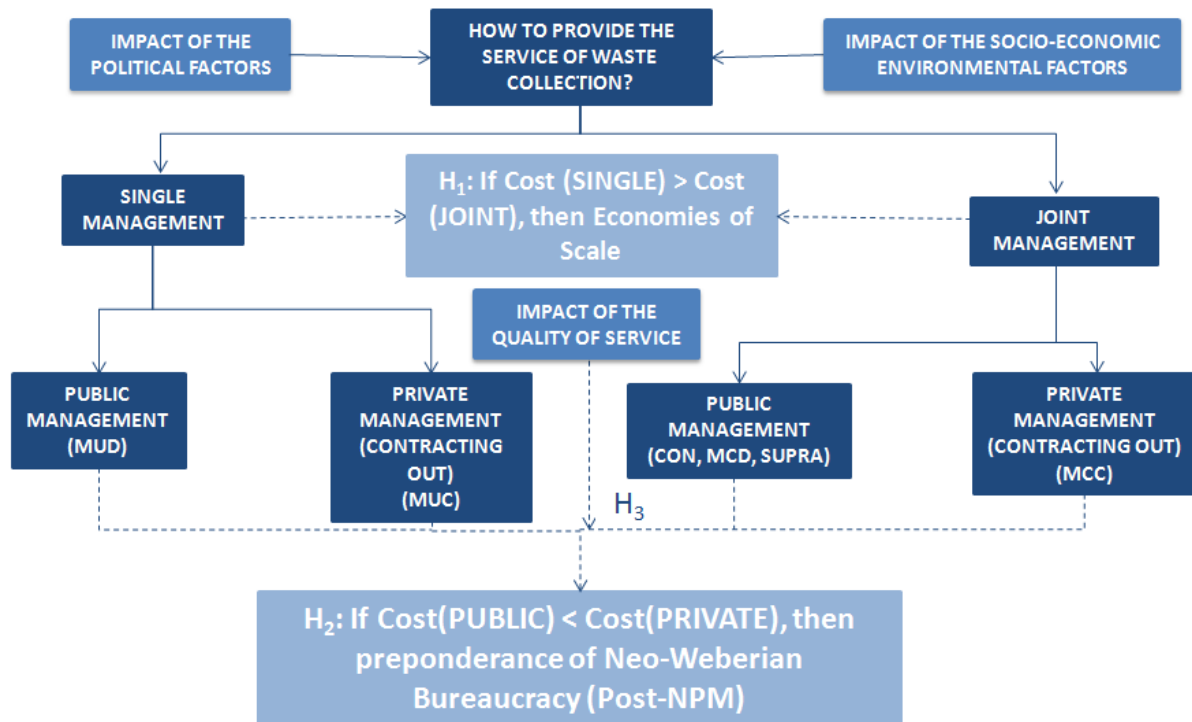
In accordance with our observations on the background to the hypotheses proposed, we examine the impact on costs of potential economies of scale, by comparing single versus joint provision (Hypothesis 1), public versus private management (Hypothesis 2), and finally, the impact of quality levels on costs (Hypothesis 3). The first row of figure 1 shows the environmental factors – the political, social, and economic context – that are liable to affect costs. After discounting these effects, the second row considers economies of scale, comparing the costs achieved with single versus joint management. Subsequently, the third row tests Hypothesis 2 with respect to private versus public management, and here the diverse forms of management are presented:

- MUD: public single provision, by the local authority (Municipal Direct).
- MUC: single provision, by a private operator (Municipal under Contract).

- MCD: joint production, by a public mancommunity of several local authorities.
- CON: joint production by a public consortium.
- SUPRA: joint production by provincial or local public companies (Supralocal Management).
- MCC: joint production by a mancommunity or consortium, with a private firm managing the service.

Finally, the quality of service, Hypothesis 3, indicates, independently of the form of management –single/joint and public/private – how far the postulates of Total Quality Management (that is, improving quality in order to reduce costs) prevail, in contradiction of the more traditional views held in this respect (i.e., that improving quality increases costs). In conclusion, figure 1 summarizes the research questions we seek to address and the relations among the variables to be examined in the empirical work.

3. EVALUATING THE COST OF WASTE COLLECTION SERVICES IN SPANISH MUNICIPALITIES

3.1. BACKGROUND

Various studies have examined the efficiency of waste collection services (Bel et al., 2010). This service is one of the most costly for local authorities and involves considerable complexity. As observed by Bel et al. (2010), various periods can be distinguished among the many studies that have sought to determine the factors concerning efficiency in waste collection services. An initial period was characterized by studies focusing on public–private forms of management, although these were often marred by an absence of high-quality data (Hirsch, 1965; Kemper and Quigley, 1976; Kitchen, 1976; Collins and Downes,

1977; Pommerehne and Frey, 1977). Most of these studies concluded that externalization reduces the cost of the service.

The second stage was characterized by an improvement in the variables incorporated into the studies, with the use of a broader time horizon and of a log-linear estimation method with different specifications (Stevens, 1978; Domberger et al., 1986; Tickner and McDavid, 1986; Szymanski and Wilkins, 1993). In all these studies, the results obtained showed that privatization reduces the costs of the service.

The most recent stage has featured the appearance of studies in which more sophisticated econometric techniques are used. Some of these studies have applied log-linear estimations with various modifications, introducing panel data methods (Reeves and Barrow, 2000; Callan and Thomas, 2001; Dijkgraaf and Gradus, 2003, 2007; Ohlsson, 2003; Bel and Mur, 2009; Bel and Fageda, 2010). Other studies, such as Bae (2010), use a translog regression technique, or Data Envelopment Analysis estimation (Bosch et al., 2000; Worthington and Dollery, 2001; Benito-López et al., 2011). In this latter phase, although the results achieved have been very heterogeneous, a majority of studies have found a positive relation between efficiency and privatization.

3.2. DATA

After the application of various filtering processes, the sample analyzed in our study was finally constituted of 923 Spanish local authorities, each with less than 50,000 inhabitants, out of a total of 3,106 Spanish local authorities with more than 1,000 and fewer than 50,000 inhabitants, and without including municipalities in the Spanish regions (or Autonomous Communities) of the Basque Country

and Navarre. Therefore, this is one of the largest such studies to be carried out in evaluating the efficiency of waste collection services in Spain. Of all the local authorities considered, almost 800 had a population of less than 23,000 inhabitants. The relation between the size of the municipality and the form in which services are provided is described in table 1. This table shows that it is the smaller authorities that present the highest level of cooperation in providing waste collection services, while in larger municipalities there is a greater use of municipal externalization.

The following data sources were utilized. To determine the cost of the waste collection service, we sought information from the Directorate General for Financial Coordination with Regional and Local Authorities (DGCFCAEL, Spanish Ministry of Finance). This body provided access to databases with information on the functional classification of the expenditure budget for local authorities for the period 2002–2008. Specifically, we consulted sub-item 442, Waste Collection and Street Cleaning. This database has been used in previous studies concerning the efficiency of the waste collection service (Benito-López et al. 2011).

Table 1: NPM-delivery forms and size

	MUD	MUC	MCD	CON	SUPRA	MCC	Intermunicipal cooperation (MCD, CON, SUPRA, MCC)
(POP<5000)	13.60%	22.60%	16.70%	14.60%	8.98%	23.50%	63.80%
(5000≤POP<20000)	18.50%	39.70%	9.40%	12.90%	4.80%	14.80%	41.80%
(20000≤POP<50000)	14.40%	52.50%	6.50%	7.20%	5.00%	14.40%	33.10%

Municipal Direct (MUD); Direct Mancommunity (MCD); Consortium (CON); Mancommunity under Contract (MCC); Supralocal management via provincial or local public companies (SUPRA); Municipal under Contract (MUC).
Population of 5000 inhabitants or fewer (POP<5000).
Population of 5001–20,000 inhabitants (5000≤POP<20000).
Population of 20,001–50,000 inhabitants (20000≤POP<50000).

The second database consulted was the Survey of Infrastructure and Equipment (EIEL) performed by the Spanish Ministry of Public Administrations (MAP). This provided data concerning the service output, the forms of management used by local authorities in providing the service, and the quality achieved. This database has been used in many studies evaluating the efficiency of local public services (Bel and Fageda, 2010; Zafra-Gómez and Muñiz, 2010; Benito-López et al., 2011; among others).

Finally, as the above database does not disclose whether the public service has been externalized, a database incorporating the announcements published by local authorities in the Official Provincial Gazettes (BOP) seeking to externalize the services provided was built. This database also includes the year of externalization, its duration, a description of the conditions applicable, and the identity of the organization awarded the contract.

On the basis of the above information, we created a wide-ranging database with multiple sources, containing information on a large number of local authorities located in all areas of Spain. The variables included in the study, together with the descriptive statistics employed to analyze the sample and to test the hypotheses proposed, are listed in table 2.

3.3. METHODOLOGY AND VARIABLES: THE MUNICIPAL COST ESTIMATION MODEL

Previous studies have shown that the technology providing an accurate description of the waste collection process can be represented using a Cobb–Douglas production function (Stevens, 1978; Reeves and Barrow, 2000; Bel and Fageda, 2010). This can be estimated from the primal production function, which requires information on the output

(usually, tons of waste collected) and the essential inputs (usually, drivers, intermediate consumption, transport elements and installations). However, as municipal accounting control systems are not very highly developed, a common problem is that information is lacking regarding the physical units of production and the factors consumed. For this reason, empirical studies seeking to estimate production functions are normally based on surveys. This strategy to obtain data generates information that is valid, but limited because it refers to a given moment of time and only contains a (more or less representative) sample of municipalities.

Table 2: PANEL A. Descriptive statistics of the continuous variables

Variable	Obs	Mean	Std. Dev.	Min.	Max.
Tcost (TC)	6447	584558.2	870864.3	60.69	10100000
Tons_waste (y)	6447	17261.08	185058.5	21.8	6077887
Quality (A_1)	6447	0.9361713	0.200724	0	1
Cont/tons (A_2)	6447	0.1742170	0.5550345	0	13.4
Ind_i (C_1)	6447	23.18319	37.44753	0	395
Tour_i (C_2)	6447	29.08888	155.422	0	3599
Com_i (C_3)	6447	17.35055	24.00824	0	595

PANEL B. NPM-delivery forms and political factors

Variable	2002	2003	2004	2005	2006	2007	2008
NPM-delivery forms							
MUD	148	148	148	148	149	149	149
MUC	338	338	338	338	328	328	328
MCD	96	96	96	96	106	106	106
CON	140	140	140	140	116	116	116
SUPRA	48	48	48	48	58	58	58
MCC	151	151	151	151	164	164	164
Total	**921**	**921**	**921**	**921**	**921**	**921**	**921**
Pol.sign (D_1)							
Conserv.	403	403	403	403	403	369	369
Progres.	516	516	516	516	516	550	550
Total	**921**	**921**	**921**	**921**	**921**	**921**	**921**
Strength (D_2)							
Coalition	361	361	361	361	361	393	393
Majority	558	558	558	558	558	526	526
Total	**921**	**921**	**921**	**921**	**921**	**921**	**921**

One way of overcoming the above limitations is to estimate the dual cost function. In fact, the technological parameters of the production function and of its dual cost function are equivalent, depending on the functional form selected and on whether the assumption that the units analyzed are cost-minimizing agents is met or not. In these circumstances, the total cost will depend on the level of production and on the prices of the inputs. In addition, when input prices do not vary greatly, or when reliable information on them is not available, Cobb–Douglas cost functions are normally estimated; in this case, the only independent variable is the level of production.

In the present study, the two above characteristics are matched: it is a reasonable assumption that there are no great differences among relative input prices, and moreover it is not possible to obtain reliable estimates of these prices. Accordingly, we make initial use of a Cobb–Douglas dual cost function (and thus preserve a technological assumption that it presents the characteristics recommended under production theory). In addition, as we are interested in observing the behavior of costs from a long term standpoint, the time factor is incorporated into our estimation. Thus, as a starting point, a model of fixed effects is defined in order to symbolize a Cobb–Douglas cost function. This function fits the following expression:

$$\ln (TC_{it}) = \alpha + \beta \ln (y_{it}) + u_i + \varepsilon_{it} \quad (1)$$

where:

- TC_{it} is the total cost of the service for municipality i during period t.
- y_{it} represents the total tons of waste collected in municipality i during period t.
- α is the intercept corresponding to the baseline unit.
- u_i represents the fixed effects corresponding to each of the I-1 municipalities.

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- ε_{it} denotes the error term, which is assumed to be independent and identically distributed.

Having ensured the technological requirements were met, we also wished to determine the extent to which other variables (quality, type of management, economic context and type of municipal government) affect the magnitude of the total cost. Thus, the expanded model we wish to estimate is as follows:

$$\ln(TC_{it}) = \alpha + \beta\ln(y_{it}) + \sum_{k=1}^{K}\gamma_k A_{kit} + \sum_{l=1}^{L}\gamma_l B_{lit} + \sum_{m=1}^{M}\gamma_m C_{mit} + $$
$$+ \sum_{n=1}^{N}\gamma_n D_{nit} + u_i + \varepsilon_{it} \ (2)$$

where A_{kit} includes two variables indicating the level of quality (K=2): an initial dichotomous variable, obtained from the survey of municipal equipment (EIEL), in which managers gave their opinion regarding the level of quality of infrastructures (0: poor quality; 1: good quality); and, to prevent this parameter from depending exclusively on the subjective appreciation of managers, we defined a second continuous variable using the ln ratio (containers/tons of waste collected). A local authority that is concerned about the quality of service will provide many waste containers, so that a waste collection point will always be in reasonable proximity to the user. These variables were evaluated using a survey of municipal equipment in which the following parameters were included: the availability of waste containers; their cleanliness and condition; and the frequency of waste collection. There are precedents for inclusion of these parameters in earlier studies of municipal efficiency (Balaguer-Coll et al., 2007; Balaguer and Prior, 2009) and of municipal *financial stress* (Zafra-Gómez et al., 2009a). On the other hand, the greater the number of containers, the higher the operating cost of the service.

B_{lit} represents five dichotomous variables (l=5) depending on how the service is provided. As stated above, the forms of individual service provision are MUD (service provided by the local authority) and MUC (provided by a private operator). Joint management, in the public version, has various formats: MCD (Direct Mancommunity), CON (Consortium), and SUPRA (supralocal management via provincial or local public companies). The final possibility, a joint public/private form of management, is that of MCC (Mancommunity under Contract). The management form excluded from the regression is the one most commonly adopted (MUC), and so the sign of the regression coefficients will indicate whether the others present higher or lower costs than MUC.

C_{mit} includes three continuous variables (m=3) representing the importance of industrial, tourism-related and commercial activities in the municipality. These variables account for the socio-economic environment of the service provision.

D_{nit} indicates the political characteristics of the type of municipal government, through the use of two dichotomous variables (n=2). The first variable refers to the political leaning of the governing party (0: right wing; 1: left wing), and the second indicates the type of government (0: coalition government; 1: absolute majority government).

One aspect to be taken into account in the estimation is that a significant proportion of the independent variables are time-invariant or almost time-invariant, which means that models of fixed effects will be inefficient because the 'within transformation' ignores the 'between variation' and thus does not take all the available information into account. In these circumstances, according to Plumper and Troeger (2007), we could perform pooled OLS regressions, which would involve eliminating the coefficient of fixed effects u_i and the disappearance of

the sub-indices t from equation (2). Another possibility is ,maintaining the panel data structure, to perform estimations using models of random effects. According to Plumper and Troeger (2007), we could thus achieve appropriate estimates for the coefficients of time-invariant variables, but not for time-variant variables. In real terms, this implies that we cannot accept globally the coefficients of panel data estimations under random effects. In consequence, our decision was to accept their proposal (estimation using Fixed Effects Vector Decomposition) as a means of achieving satisfactory estimates for all the variables considered. Estimation by this latter method requires the application of an algorithm containing the following three essential steps:

Step 1.

An initial estimation is made with fixed effects, after generating demeaned dependent and time-varying independent variables:

$$\ln(\ddot{T}\ddot{C}_{it}) = \sum_{m=1}^{M} \gamma_m \ddot{C}_{mit} + \ddot{u}_i + \ddot{\varepsilon}_{it} \quad (3)$$

where $\ddot{T}\ddot{C}_{it} = TC_{it} - \overline{TC}_{it}$; $\ddot{C}_{mit} = C_{mit} - \overline{C}_{mit}$ and $\ddot{\varepsilon}_{it} = \varepsilon_{it} - \overline{\varepsilon}_{it}$ (4) reflect the deviations of the variables with respect to the mean. From equation (3), we estimate the individual effect arising from the time-invariant variables, from the mean of the time-varying variable sand from the intercept:

$$\hat{u}_i = \ln(\overline{TC_i}) - \sum_{m=1}^{M} \gamma_m \overline{C}_{mi} - \overline{\varepsilon}_i \quad (4)$$

Step 2.

A second regression is defined to determine the dependence of the individual effect $\hat{u}_i$ of the time-invariant variables:

$$\hat{u}_i = \beta \ln(y_i) + \sum_{k=1}^{K} \gamma_k A_{ki} + \sum_{l=1}^{L} \gamma_l B_{li} + \sum_{n=1}^{N} \gamma_n D_{ni} + h_i \quad (5)$$

Having estimated equation (5), $\hat{u}_i$ is decomposed into one part that is explained by the time-invariant variables and another, explained by the residue $\hat{h}_i$ which describes the unexplained part of the individual effect.

$$\hat{h}_i = \hat{u}_i - \beta \ln(y_i) - \sum_{k=1}^{K} \gamma_k A_{ki} - \sum_{l=1}^{L} \gamma_l B_{li} - \sum_{n=1}^{N} \gamma_n D_{ni} \quad (6)$$

Step 3.

After determining the unexplained part of the individual effect, equation (2) is adapted to introduce $\hat{h}_i$ and to estimate the total cost by means of pooled OLS:

$$\ln(TC_{it}) =$$
$$\alpha + \beta \ln(y_i) + \sum_{k=1}^{K} \gamma_k A_{ki} + \sum_{l=1}^{L} \gamma_l B_{li} + \sum_{m=1}^{M} \gamma_m C_{mit} +$$
$$+ \sum_{n=1}^{N} \gamma_n D_{ni} + \delta \hat{h}_i + \varepsilon_{it} \quad (7)$$

3.4. RESULTS

The results of the estimates obtained are shown in table 3. Although many more estimations were made, here only four are presented, those enabling us to test the hypotheses proposed in the second section.

Table 3: Results of the regression analysis [dependent variable ln(TC)]

	Pooled OLS reg	Pooled OLS reg	Panel data (random effects)	Panel data (fixed effects vector decomp.)
Lntons_b (y)	1.000191(***)	0.7783174(***)	0.5906449(***)	1.013846 (***)
Qualit (A_1)	0.054701(***)	0.0419429(***)	0.0839536(***)	0.0456818(***)
Ln_con/ton (A_2)	0.418973(***)	0.3470823(***)	0.4210444(***)	0.4555547(***)
MUD (B_1)		-0.3184993(***)	-0.2671473(***)	-0.4227873(***)
MCD (B_3)		-0.7743398(***)	-0.6068347(***)	-0.8468003(***)
CON (B_4)		-0.3765715(***)	-0.4659037(***)	-0.4667018(***)
SUPRA (B_5)		-0.9359331(***)	-0.6281185(***)	-1.054926(***)
MCC (B_6)		-0.3939220(***)	-0.3565785(***)	-0.3893578(***)
Ind_i (C_1)		-0.0012525(**)	0.0031910(***)	-0.0067239(***)
Tour_i (C_2)		0.0001881(**)	0.0009148(***)	-0.0006761(***)
Com_i (C_3)		0.0137888(***)	0.0048130(***)	0.0012605 (**)
Polit_si (D_1)		-0.0171788	-0.0029069	0.0128241
Strength (D_2)		-0.2107347(***)	-0.0913581(***)	-0.2786144(***)
Constant (α)	5.280944(***)	7.127475(***)	8.751902(***)	5.924758(***)
No. observ.	6412	6412	6412	6412
No. groups			918	918
R-squared	49.770%	57.010%	53.160%	87.450%

***$p<0.001$; **$p<0.05$.

Column 1 shows the representative coefficients of a strictly technological cost function, under which costs depend exclusively on the tons of waste collected and on the quality level of the service provided. The model is statistically significant and has an R^2 value of almost 0.5. It is interesting to note that all the variables are positive and highly significant, which suggests that the quality of service is positively related to total costs (it would seem that the postulates of Total Quality Management are difficult to introduce in this sector). Moreover, the coefficient of regression associated with the production variable (y) would suggest that, for the sample of municipalities analyzed (between 1,000 and 50,000 inhabitants), potential economies of scale are insignificant because the technology presents constant returns to scale.

Column 2 shows the results of estimating a much more general total cost function. It is apparent that the political sign of the party in government has no effect on total costs, while the other variables are highly significant. From a technological standpoint, it remains true that increasing quality raises costs, although certain economies of scale would become apparent, with an output/input elasticity of 1.2848 (1/0.77831). It would thus seem that the introduction of management variables related to the economic environment and to the short-term political situation could give rise to the appearance of economies of scale which, with respect to strictly technological estimations of the service, could remain hidden.

On examination of the forms of management, it can be seen that all those considered achieve cost savings in relation to the variable omitted (that of individual provision under private contract, MUC). These results coincide with those obtained by Bel and Fageda (2010), and contribute to the debate as to whether private management achieves lower costs than public management of waste collection services (Bel et al., 2010). The greatest cost saving is achieved when management of the service is performed in the form of supralocal management (SUPRA), which would indicate that projects tominimize costs produce very good results when municipalities combine their resources. In more quantitative terms, in accordance with column 2, supralocal management achieves a total cost reduction of 60.77 per cent, in comparison with municipal management under contract (MUC) (as the coefficient is $\gamma = -0.9359331$, the proportion of the cost of supralocal management with respect to that of municipal management under contract would be $e^{-0.9359331} = 0.3922$, representing a potential cost saving of 60.78 per cent). These results are similar to those obtained by Bel and Mur (2009). In relation to variables concerning the economic environment, municipalities with an important degree of industrial activity would achieve total cost reductions, but this would not be the case in other municipalities, with important levels of

tourism-related or commercial activity. Finally, a predominant position of the governing party would produce a cost reduction of 19 per cent ($e^{-0.2107347}$ = 0.8099), in comparison with the costs facing a government in coalition.

The weakness of the results presented in column 2 lies in the fact that they are obtained from a pooled OLS estimate, while the Breusch and Pagan test shows that the data structure would be better expressed using panel data estimates. Accordingly, column 3 presents the results of a panel data estimation by random effects. The variables with significant coefficients remain present, although there is seen to be a change of sign in relation to the variable for industrial activity. In addition, there is a greater (hypothetical) presence of economies of scale depending on production levels. Nevertheless, as observed above, these estimates present weaknesses when the data contain time-invariant independent variables. And it is precisely these two changes, affecting time-varying variables, which are not well estimated in a panel data random effects model.

Finally, column 4 shows the values of the best fit obtained, as evidenced by the highest R^2 value. In general, the estimates produced results comparable with the previous ones, thus confirming their robustness, with the sole exception of the change of sign in the indicator of tourism-related activity. Our results show that public service provision via a provincial or local public company (SUPRA) is the management form presenting lowest levels of waste collection costs. This is followed by the direct mancommunity formula (MCD), which is also a form of inter-municipal management. To a lesser extent, the consortium form of management also achieves lower costs. Another noteworthy result is that even direct management by the local authority (MUD) produces lower costs than those associated with mancommunity under contract (MCC). These results, therefore, confirm that private management formulas do not produce cost savings for small and

medium-sized local authorities; these are achieved, on the contrary, by inter-municipal public forms of management.

We note, too, the non-existence of technological economies of scale, a finding similar to that reported by Bel and Mur (2009), together with a heightening of the differences between supralocal management and the other types of management structure.

In summary, the results of the most robust estimation (column 4) lead us to accept Hypothesis 1. Joint management achieves important economies of scale, even though the technological regression coefficient does not highlight this fact. In consequence, for both public and private management, a combination of local authorities will always achieve lower total service provision costs. With respect to Hypothesis 2, the results shown in column 4 of table 2 are also quite clear: for the municipal municipalities analyzed, public management, in each of its different forms, always achieves cost reductions greater than those achieved by private management forms, whether individual (MUC) or joint (MCC). Therefore, the postulates of neo-Weberian bureaucracy regarding the supremacy of public management are corroborated, and Hypothesis 2 should be rejected. Finally, with respect to Hypothesis 3, the results shown by the two quality indicators examined are clear: greater quality is associated with higher costs. We find, therefore, that this is a sector in which the traditional viewpoint prevails, in contrast to that of Total Quality Management, according to which greater quality helps reduce costs.

4. CONCLUSIONS AND DISCUSSION

The present economic and financial crisis continues to have an adverse effect on all levels of public administration, and politicians continually advocate greater control of public deficits to prevent their economies from being penalized by the markets. In this context, the situation of local authorities is no different. An unfavourable financial condition, characterized by deficits and poor cash management, would lead such authorities to seek alternative means of managing the services they provide in order to improve their overall situation.

This is the context in which the present study must be considered; its aim is to analyze and determine which forms of management most contribute to lowering costs in the provision of the public waste management service, one of the most complex services provided and one that imposes considerable costs on local authorities.

The results obtained, for a large sample of Spanish local authorities, each with fewer than 50,000 inhabitants, and for the period 2002–08, show that for this type of municipality, mancommunal forms of management, and public management exercised via the local authority, reduce the cost of the service, especially with reference to the supra-municipal public company (SUPRA) form of service provision. These findings confirm the validity of Hypothesis 1 and reject those of Hypothesis 2, regarding the lower cost of private management forms. In this respect, the two management forms that reflect a form of privatization, MUC and MCC, are the ones producing the smallest cost reduction.

In short, these results demonstrate the existence of economies of scale in service provision, and suggest that some postulates of NPM, such as the externalization of services, might need to be reconsidered,

as their application does not achieve better results regarding the cost of services provided. This situation could be due to the fact that smaller local authorities enter into poorly specified contracts, or incur high service monitoring costs following externalization. This situation gives rise to high transaction costs, a situation aggravated by a lack of competition among private suppliers, who show little interest in the relatively small contracts offered by these local authorities. All these considerations corroborate the postulates of post-NPM or neo-Weberian bureaucracy, namely that a lack of coordination and control of externalization processes may bring about higher costs, which are not addressed in the corresponding contracts entered into by small and medium-sized local governments.

Another noteworthy finding is that increasing the quality provided does raise the cost of this service (Hypothesis 3 is positively related to total cost), which means that the postulates of Total Quality Management are not applicable to this service.

With respect to the control variables introduced, the results achieved show that political parties that enjoy an absolute majority in local government tend to have lower costs. The economic characteristics examined were also found to be significant. Furthermore, all the signs and levels of significance were tested for each of the different methodologies employed and demonstrated the robustness of the latter.

In view of these findings, should public services be recentralized? Or should they be concentrated? The question remains open, but our results, referring to a sufficient time period and to a very representative sample, show that economies of scale and cost savings are generated through joint management (inter-municipal cooperation) for certain types of small and medium-sized municipalities, and that NPM postulates in relation to privatization should be reconsidered, in favour of neo-Weberian forms of public management based on ideas of

classical public bureaucracy (Du Gay, 2000; Kuhlmann, 2010), as the latter achieves greater cost savings and situates small and medium-sized local governments in a better position to overcome the economic crisis currently affecting them.

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CHAPTER 5: CONCLUSIONS AND FUTURE RESEARCH

1. CONCLUSIONS AND FUTURE RESEARCH

The main aim of this thesis is to define and identify the factors explaining why public managers provide municipal services in different ways, and to analyse the influence of different forms of management on municipal debt and on the cost of waste collection services.

The question of how local governments manage their resources and finances has become an issue of priority importance within the approach known as New Public Management (NPM), which offers a broad spectrum of ways to manage public services, incorporating diverse theoretical approaches, derived mainly from economic and political research. Numerous factors may influence the decision to implement changes in how public services are managed, but perhaps one of the most widely studied is that of the relation between fiscal stress and NPM management forms. The study of this relationship constitutes the main theoretical framework on which we base the arguments concerning the different problems and investigations to which this thesis seeks to contribute. This analysis is of great contemporary importance because the present financial and economic crisis has accentuated the need to evaluate local public sector activities, requiring the adoption of mechanisms to improve municipal financial health, together with more responsible behaviour by municipal managers and a rational use of available resources, in order to avoid excessive borrowing.

Taking these considerations into account, fiscal stress has been measured using the concept of financial condition, for which purpose an extensive set of economic, financial, social and environmental indicators must be constructed and examined. The use of this concept

adds value to the study traditionally performed on the relationship between fiscal stress and NPM forms, which is limited to observing measures such as legal limitations on borrowing, the financial burden and financial transfers from central to local government, while omitting questions such as measures of short-term solvency, borrowing and budget deficit. We believe that the latter measures can contribute to a better understanding of the real situation facing a municipality, and help identify the impact of each element of fiscal stress on the probability of any given management form being adopted.

In this context, various theoretical approaches have been developed, according to which in the presence of financial difficulties municipalities may make changes in the management forms of public services in order to reduce costs and thus alleviate fiscal stress. However, most previous studies have only considered whether the provision of public services should be outsourced. But there exist other options that municipalities could employ in order to reduce the cost of the services they provide. Accordingly, this thesis proposes the following research question: what is the probability that, in a situation of fiscal stress, public managers would choose to provide municipal services by means of alternative management forms, such as agencification, inter-municipal cooperation or the creation of public companies?

The consideration of these alternatives – which represents a contribution to knowledge in this field – is necessary because local authorities often prefer not to lose control of their services, as occurs with outsourcing, and seek other formulas to maintain this control.

Another contribution made in this thesis is its use of panel data methodology, which has rarely been employed for this type of study, making it possible to identify and measure effects that are not detectable in time series or cross-sectional research. The application of this methodology has improved our understanding of the relationship

between fiscal stress and local managers' choice of how to restructure municipal services from the different management alternatives available, the relationship between borrowing and the use of NPM instruments to circumvent regulatory limits, and the relationship between the cost of waste collection services and the way in which they are managed.

Nevertheless, unquestionably the most important aspect to be considered when changing how a public service is to be managed is that ultimately cost savings must be produced while acceptable quality is maintained. We demonstrate that public managers prefer outsourcing and inter-municipal cooperation, and that both management forms are inversely related to municipal borrowing (evidence is presented of the use of these types of management formulas to transfer debt from the municipal budget to other entities). This thesis focuses on analysing the costs arising from different ways of managing the waste collection service, and seeks to provide local government officials, both political and technical, with useful information on the provision of this service. Thus, we aim to facilitate the formulation of restructuring proposals toward management methods that will raise productivity and reduce the cost of waste collection services.

The results obtained for a large sample of Spanish municipalities with over 1,000 and fewer than 50,000 inhabitants, for the period 2002-2008 show that for this type of municipality, the forms of public management in which services are provided directly by the local authority or through a shared approach, especially inter-municipal cooperation, obtain lower average service costs.

Evidence has also been obtained that increasing service quality provokes increased costs, and that municipalities governed by an absolute majority have lower service costs than do those governed by a coalition. Furthermore, all the signs and significance levels were tested

and verified by each of the different methodologies used, which demonstrates the robustness of the results obtained. Thus, we conclude that the management of public services by municipal cooperation favours the presence of lower costs in some cases; in particular, evidence of this is obtained concerning the waste collection service. On the contrary, outsourcing, one of the formulas most commonly used by local authorities in the management of the waste collection service, not only does not reduce the average cost of the service, but indeed increases it with respect to other forms of public management.

Consequently, our results suggest that the tenets of NPM regarding certain forms of management should be reviewed, as they do not produce the best results in terms of the level of service cost. This evidence may reflect an approximation to the postulates of post-NPM or Neo-Weberian bureaucracy. The effect observed might be accounted for as resulting from the lack of coordination and control of outsourced processes, giving rise to higher costs than those envisaged in the outsourcing contract. Which leads us to pose the following question: is it then necessary to apply a recentralisation of public services? Or their concentration? Although the debate continues, our results, obtained for a broad time horizon, show that it is necessary to reassess the principles of NPM. Thus, for a given type of smaller municipalities, we propose the use of public management formulas of inter-municipal cooperation, which would enable economies of scale and cost savings, while in larger municipalities, which is where outsourcing is currently most often encountered, the public provision of services (by a single authority or jointly with others) would ensure that this type of municipality would also obtain lower costs.

Henceforth, future lines of research are necessary to continue this analysis, examining a broader range of public services in order to determine which forms of management produce the lowest costs, with particular attention to the present-day context, that of a global financial

and economic crisis which is impacting on economic activity in both the private and the public sectors.

In this respect, in view of the present economic situation, any analysis of public-sector financial information should take into consideration the impact of the crisis on an entity's financial condition, since the fiscal stress-management form relationship may have changed in recent years due to the impact of the current recession, in terms of declining revenue, which has exerted very strong pressure on efforts to control the deficit, at all levels of public administration.

Another question that should be examined in greater detail in future research is that of the strategies being adopted by local authorities during periods of crisis, in relation to their management of public services, and of whether these strategies represent an efficient response. This study would involve assessing the effectiveness of the measures adopted and determining whether the decisions taken by public managers actually reduce costs and alleviate fiscal stress.

For future research, we also believe it would be interesting to introduce the concept of the "duration" of the situation of fiscal stress, since in practice it is difficult to accept the premise that if an administration is facing fiscal stress problems in a given year it will undertake the restructuring of its forms of service provision in the very same year. This question was addressed by Levine (1978), who held that the intensity of problems of fiscal stress would impel authorities to introduce measures to overcome them. It seems logical that a change would be more likely if the local authority were faced with a long-lasting situation of fiscal stress; it would be increasingly likely to take action to alleviate this situation as time progressed. Another aspect to be considered in studying this phenomenon is that of taking into consideration the time lag, i.e. the period elapsed from when a deterioration takes place in the municipality's financial health until the

decision is taken to change the way in which public services are managed. In other words, we should take into account a broader time horizon during which the authority may adopt changes in the delivery of public services. In this respect, it might be appropriate to use a dynamic method, such as that used in duration analysis.

Finally, regarding the study of off-budget operations, in future work we intend to use dynamic panel data models with estimators, incorporating instrumental variables, such as those developed by Arellano and Bond (1991) and Arellano and Bover (1995) to analyse the effect of changes in the management of public services on local government borrowing.

2. CONCLUSIONES Y FUTURAS LÍNEAS DE INVESTIGACIÓN

El objetivo principal de esta tesis doctoral es la determinación e identificación de los factores explicativos del por qué los gestores públicos utilizan diferentes formas para gestionar los servicios públicos, así como el análisis de la influencia de la adopción de estas formas de gestión en el endeudamiento municipal y en el coste del servicio de recogida de residuos.

En este sentido, el estudio de cómo las administraciones locales gestionan sus recursos y sus finanzas ha pasado a ser una cuestión central y prioritaria dentro de la corriente conocida como la Nueva Gestión Pública (NGP), donde se ofrece un amplio abanico de formas de gestionar los servicios públicos, utilizando para ello diversos enfoques teóricos provenientes, principalmente, de la literatura económica y política. Siendo numerosos los factores que pueden condicionar la decisión de llevar a cabo cambios en la forma de gestionar los servicios públicos, quizás uno de los más estudiados en la literatura es la relación *fiscal stress*–formas de gestión de la NGP. Así pues, el estudio de esta relación es el marco teórico principal que proporciona argumentos a los distintos problemas o investigaciones a los que esta tesis doctoral pretende contribuir. Este análisis es hoy en día de gran relevancia debido a la actual crisis económica y financiera que ha acentuado aún más la preocupación por la evaluación de las actividades del sector público local, demandando la adopción de mecanismos que permitan mejorar la salud financiera municipal, comportamientos más responsables en los gestores municipales y un uso racional de los recursos disponibles, evitando un excesivo nivel de endeudamiento.

En base a todo lo anterior, para medir el *fiscal stress* se ha utilizado el concepto de condición financiera, para lo cual se ha construido una amplia batería de indicadores económicos, financieros, sociales y ambientales. El empleo de este concepto añade valor al estudio que tradicionalmente se ha realizado de la relación entre *fiscal stress* y formas de gestión de la NGP, debido a que estudios previos se han limitado a observar únicamente medidas tales como las limitaciones legales al endeudamiento, la carga financiera y el tamaño de las transferencias del gobierno central al local en vez de emplear medidas de solvencia a corto plazo, de endeudamiento y de déficit presupuestario. Consideramos que estas últimas medidas contribuyen de mejor forma a comprender la verdadera situación en la que se encuentra la entidad y la incidencia de cada elemento del *fiscal stress* en la probabilidad de adoptar una determinada forma de gestión.

En este contexto, se han desarrollado diversos enfoques teóricos que indican que ante la presencia de dificultades financieras los ayuntamientos buscarán soluciones llevando a cabo cambios en las formas de gestión de los servicios públicos con objeto de ahorrar costes y reducir, por tanto, los niveles de *fiscal stress*. Pero la mayoría de los estudios previos, sólo han considerado las posibilidades de externalizar o no servicios, sin embargo, hay otras opciones que los municipios pueden emplear para reducir los costes de los servicios que prestan. Así, en esta tesis doctoral hemos planteado la siguiente cuestión de investigación: ¿Cuál es la probabilidad de que ante una situación de *fiscal stress* los gestores públicos opten por prestar sus servicios mediante otras alternativas de gestión como la agencificación, la cooperación intermunicipal y la creación de empresas públicas?

La consideración de estas alternativas, que constituye una contribución a la literatura previa, es necesaria porque en muchas ocasiones los ayuntamientos prefieren no perder el control de los

servicios como sucede con la externalización y buscan otras fórmulas que les permitan ejercer el control sobre los mismos.

Asimismo, otra contribución realizada es el uso de una metodología de datos de panel, que ha sido escasamente considerada para este tipo de estudios, lo que ha permitido identificar y medir efectos que no son detectables en las series temporales o de corte transversal. En este sentido, la aplicación de esta metodología ha permitido mejorar nuestra comprensión de: la relación entre el *fiscal stress* y la elección que los gestores locales hacen para reestructurar sus servicios en base a distintas alternativas de gestión; la relación entre el endeudamiento y el uso de instrumentos proporcionados por la NGP para eludir sus límites normativos; y la relación entre el coste del servicio de basura y la forma con la que se gestiona.

Pero no cabe duda de que el aspecto más importante a tener en cuenta a la hora de cambiar la forma de gestionar un servicio público es que, finalmente, produzca un ahorro en costes dentro de un nivel de calidad adecuado. Tras obtener evidencias de que los gestores públicos prefieren la externalización y la cooperación intermunicipal y de que ambas formas de gestión presentan una relación negativa con los niveles de endeudamiento municipal (se ha puesto de manifiesto el uso de este tipo de fórmulas para el desvío de deuda del presupuesto municipal hacia otro tipo de entidades) nos detenemos en el análisis de los costes que producen diferentes formas de gestionar el servicio de recogida de basuras. Así, se pretende contribuir a que los responsables de los gobiernos locales, tanto a nivel político como técnico, dispongan de una información útil sobre la prestación de este servicio, lo que puede propiciar la formulación de propuestas de reestructuración hacia aquellas formas de gestión que mejoren la productividad y el coste del servicio de recogida de basura.

Los resultados obtenidos para una amplia muestra de ayuntamientos españoles de más de 1,000 y menos de 50,000 habitantes y para el período 2002-2008 muestran que, para esta tipología de ayuntamientos, las formas de gestión públicas prestadas directamente por el propio ayuntamiento y las formas de gestión mancomunadas, especialmente, las que hacen referencia a la cooperación intermunicipal reducen el coste medio del servicio.

También se obtienen evidencias de que un aumento en la calidad del servicio provoca un aumento en el coste y de que los ayuntamientos con gobiernos de mayoría absoluta presentan costes del servicio menores que los gobernados en coalición. Además, todos los signos y niveles de significación han sido contrastados por las diferentes metodologías empleadas, lo que demuestra la robustez de los resultados. De esta forma, constatamos que la gestión de servicios públicos por cooperación municipal favorece la presencia de menores costes en la prestación de determinados de ellos, en concreto, se obtiene evidencia de esta situación para el servicio de recogida de residuos. Por el contrario, la externalización, una de las fórmulas más utilizadas por los ayuntamientos para gestionar el servicio de basura, no sólo no reduce el coste medio del servicio, sino que lo aumenta con respecto a otras formas de gestión públicas.

Así pues, nuestros resultados vienen a demostrar que quizás los postulados de la NGP sobre determinadas formas de gestión deben de ser revisados al no obtener los mejores resultados en relación con el nivel de coste de los servicios. Estas evidencias pueden poner de manifiesto una acercamiento a los postulados *post-NPM* o *Neo-Weberian bureaucracy*. La justificación de este hecho podría estar en la falta de coordinación y control de los procesos de externalización que pueden conllevar mayores costes no recogidos inicialmente en los contratos, lo que nos induce a plantear la siguiente cuestión: ¿Estamos ante la necesidad de llevar a cabo un proceso de recentralización de servicios

públicos? ¿O de concentración de los mismos? Aunque el debate continúa abierto, nuestros resultados, obtenidos sobre un amplio horizonte temporal, demuestran que es necesario llevar a cabo un replanteamiento de los postulados de la NGP. Así, para una determinada tipología de ayuntamientos de menor tamaño, proponemos el uso de fórmulas públicas de cooperación intermunicipal que permitan obtener economías de escala y lograr un mayor ahorro en costes, mientras que para los ayuntamientos de mayor tamaño donde se da un mayor uso de procesos de externalización, la producción pública, tanto individual o conjunta, lograría que este tipo de ayuntamientos presentara menores costes.

A partir de aquí, las futuras líneas de investigación van a continuar por el análisis de un mayor número de servicios públicos para determinar qué formas de gestión presentan un menor coste, poniendo un mayor énfasis en el período que actualmente vivimos de crisis económica y financiera mundial que está condicionando la actividad económica tanto del sector privado como del sector público.

En este sentido, la coyuntura económica actual requiere que cualquier análisis de la información financiera del ámbito público lleve consigo la consideración de la repercusión de la misma sobre la condición financiera, ya que la relación *fiscal stress*-formas de gestión utilizadas puede haberse modificado durante los últimos años debido al impacto que la actual recesión ha podido tener en la merma de las fuentes de ingresos, habiendo ejercido una fuerte presión sobre el control del déficit público en todos los niveles de la administración.

Por otro lado, pretendemos profundizar en el futuro en las estrategias que están adoptando los ayuntamientos durante los periodos de crisis en relación con la gestión de sus servicios públicos y si éstas resultan eficientes para ayudar a salir de la misma. Así, se pretende evaluar la eficacia de las medidas llevadas a cabo,

comprobando que la elección hecha por los gestores públicos proporcionará en el futuro un ahorro en costes y, una reducción del *fiscal stress*.

Asimismo, nos parece interesante considerar para futuras líneas de investigación la introducción del concepto "duración" de la situación de *fiscal stress*, ya que, en la práctica, es difícil aceptar la premisa de que si una administración se enfrenta a problemas de *fiscal stress* durante un sólo año pondrá en marcha procesos para reestructurar sus formas de gestión de servicios en ese mismo año. En este mismo sentido se pronunció Levine (1978) al considerar que la intensidad de los problemas de *fiscal stress* determinará que los gobiernos lleven a cabo diversas medidas en un intento de superarlos. Parece lógico pensar, que cualquier cambio sería más probable si la autoridad local se encuentra ante una situación de *fiscal stress* de mayor duración y por tanto, tomará medidas para aliviar tal situación conforme avance el tiempo. Otro aspecto a tener en cuenta en la metodología a emplear para el estudio de este fenómeno es la consideración de un tiempo de retardo "time lag" desde que se produce un empeoramiento en la salud financiera de los municipios y éstos deciden tomar la decisión de cambiar la forma de gestionar sus servicios, es decir, habría que tener en cuenta un mayor horizonte temporal para que el ayuntamiento lleve a cabo cambios en la prestación de los servicios públicos. Para ello podría ser oportuno la utilización de una metodología dinámica como la empleada en los denominados análisis de duración.

Finalmente, respecto al estudio de las operaciones fuera de presupuesto "*off budget*", en futuros trabajos pretendemos emplear modelos dinámicos de datos de panel con estimadores que empleen variables instrumentales como los desarrollados por Arellano y Bond (1991) y Arellano y Bover (1995) para analizar el efecto que las decisiones de cambio en la forma de gestionar los servicios públicos

tendrán sobre los niveles de endeudamiento de las administraciones locales.

3. REFERENCES

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