

**EFFECT OF MODES OF PUBLIC SERVICES DELIVERY ON THE EFFICIENCY OF
LOCAL GOVERNMENTS: A two-stage approach**

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ABSTRACT

The empirical evidence to date is contradictory as to the best use of management for public services. A clear relationship has not been found between the modes of public services delivery and the efficiency of local Governments. In addition, existing studies have been carried out for only one or two services and/or in a concrete year, so the real effect is difficult to generalize. In this sense, the aim of this study is to analyse the effect of functional decentralization and externalization processes on the efficiency of local public services delivery, in order to clarify the situation. For this, we considered 129 Spanish municipalities with populations over 10,000 between 1999 and 2007. The results show that both pure modes of public services delivery –functional decentralisation and externalisation- impact negatively on efficiency of local governments. Nevertheless, public business entities created by right-wing parties may improve the annual efficiency of the local governments. Furthermore, mixed companies may increase the inter-annual variation of the efficiency, especially when they are promoted by right-wing governments too.

KEYWORDS: public services, efficiency, decentralisation, externalisation, local Government.

JEL CLASSIFICATION: H7; M48

1. INTRODUCTION

Some years ago, the study of efficiency acquired increasing importance, when the European Economic and Monetary Union established restrictions with a view to attaining budgetary stability, which oblige governments to assign their resources efficiently to satisfy their citizens (Benito et al., 2010a). In Spain this particularly affects local governments, which provide most public services. In order to improve the efficiency of the public administration and to reduce public sector spending, politicians began to reform public services in different ways. In the case of Spain, as the empirical evidence shows, local administrations are resorting to private contracting (Pina and Torres, 1998; Ramió-Matas and García-Codina, 2006) and decentralisation of the administration (Cuadrado, 2008; Prado-Lorenzo et al., 2009, Benito and Bastida, 2005, 2008) in order to supply the services that users demand.

A large number of studies have analysed efficiency at the local level, including Worthington (2000) for Australia; Grossman et al. (1999) for the USA; De Borger et al. (1994) and De Borger and Kersten (1996) for Belgium; Taïrou (2000) for France; Dijkgraaf and Gradus (2003) for the Netherlands; Dijkgraaf et al. (2003) for Denmark; and Ohlsson (2003) for Sweden. However, literature focused on the effect of decentralisation and externalisation with respect to Spanish local government efficiency is scarce. Most studies have focused merely on the dichotomy between private and public management, and do not consider the different ways of providing public services through functional decentralisation. In addition, previous papers suffer other limitations as regards the samples selected and the number of services analysed. In general, their analyses are carried out in a specific year, so the real effect is difficult to observe, and they are only focused on one region of Spain. Furthermore, only one or two services are included in most such studies, and so the evidence obtained cannot be generalised for all public services.

Accordingly, the aim of this study is to analyse the effect of functional decentralisation and externalisation processes on the efficiency of Spanish local governments. Concretely, we expect to add empirical evidence about this topic by (i) specifying the impact of these processes; (ii) conducting a complete analysis of functional decentralisation, taking into account the different decentralised entities – public companies, foundations, autonomous organisations and public business entities – instead of only one mode of delivery; and (iii) choosing a time period that permits

the use of panel data methods, which provide more robust results and allow us to control the unobservable heterogeneity and correct the endogeneity problems between dependent and independent variables.

With this goal in mind, we considered 129 Spanish municipalities with populations of over 10,000 between 1999 and 2007, inclusive. In order to provide more precise findings, the process of decentralisation is disaggregated according to the legal form of the organisation: public companies, autonomous organisations, public business entities and foundations.

The results obtained show that both pure forms of public services management have a negative impact on efficiency. Nevertheless, public business entities created by right-wing parties may improve the annual efficiency of the local governments, as well as, companies with an ownership structure formed by a public-private sector mix increases inter-annual efficiency, especially when they are promoted by right-wing governments too.

2. MODES OF PUBLIC SERVICES DELIVERY AND EFFICIENCY OF LOCAL GOVERNMENT: Research Hypotheses

2.1. Modes of public services delivery at local level in Spain

According to Article 11.1 of the 1985 Local Government Regulatory Law (LRBRL), a municipality is the basic local entity of the territorial organisation of the state, with legal personality and full capacity to fulfil its purpose. The responsibilities attributed to local government are set out in chapter 25.2 of the LRBRL, and are strongly linked to the population of the municipality, as shown in Table 1. In addition, article 28 enables municipalities to offer complementary services related to aspects such as education, culture, the promotion of women's rights, housing, health care and environmental protection.

Table 1. Local public services in Spain

ESSENTIAL SERVICES	COMPULSORY SERVICES ACCORDING TO POPULATION			
	In all towns	Population > 5,000	Population > 20,000	Population > 50,000
-Street lighting				
-Cemetery				
-Waste collection and street cleaning	-Public park	-Civil defence		
-Domestic supply of drinking water	-Public library	-Social services		-Public transport
-Sewer system and drains	-Market	-Fire prevention		-Environmental
-Road access and paving of public roads	-Waste treatment	-Public sports facilities		protection
-Food and drink control		-Slaughterhouse		

Source: The authors, based on the LRBRL.

The LRBRL allows municipal services to be provided through the following ways:

- **Direct Management:** the administration, management and control of public services are handled by the public administration itself.
- **Decentralised management:** public services are provided through the creation of new entities. This process is known as functional decentralisation. Concretely, local governments are able to create the following entities:
 - **Autonomous organisations:** public bodies with their own legal personality that have an autonomous management system, but which continue to form part of the General Administration. They are subject to Administrative Law and their regulations are governed by Act 6/1997 of 20 April 1997, on the Operation and Organization of the General State Administration. This type of structure is often used for tax collection purposes, in view of the budgetary control obtained and the fact that procurement rules are flexible in this case. Autonomous organisations are used for administrative and commercial tasks.
 - **Public Business Entities:** these are public bodies that are engaged in providing services or goods with financial compensation and are subject to private law, except in relation to the exercise of public powers and certain aspects of performance, in this particular case public law is applied. These entities are used for some cultural services and urban development and housing services, mainly in municipalities in Catalonia and the Basque Country.
 - **Public Companies:** entities with their own legal personality, distinct from that of their members, and which operate in accordance with Commercial Law, using their own capital. The provision of public services through these corporations is usually financed through public property taxes and prices charged to the users of the services (Rubin, 1988; Molinari and Tyer, 2003). Public companies are usually preferred for urban management, water supply and sanitation and urban waste management.
 - **Public Foundations:** according to the Spanish Association of Foundations, these are non-profit organisations whose patrimony is perpetually devoted to the general interest, and whose beneficiaries are groups of people. Among their general interest goals are the defence of human rights (including assistance to victims of terrorism and other acts of

violence), social care and social inclusion, educational, cultural and social issues, scientific, sports-related, health-related and work-related activities, environmental protection and technological development.

- **Contracting out:** the public administration outsources services management to the private sector. The local administration retains ownership and to a large degree maintains decision and control capacity, but private entities provide and manage the services in question. The main formulas for indirect management or externalisation are administrative concession, interested management, leasing, corporations and cooperatives, consortia and agreement.
- **Mixed companies:** the public administration and the private sector jointly provide capital to create these companies. The management of public services is shared by the two sectors.

2.2. The efficiency of local governments

In general, in research into efficiency at the local level in Spain, certain authors can be highlighted, such as Pina and Torres (2001), Bosch et al. (2000), Diez-Ticio and Mancebón (2002 and 2003), Giménez and Prior (2003 and 2007), Garcia-Sanchez (2006 and 2007), Balaguer-Coll et al. (2007 and 2010), Benito et al. (2010a) and Bel et al. (2009), although most of these studies do not focus on how functional decentralisation and externalisation processes affect efficiency in the provision of public services.

The main conclusion in the case of Spain is that the use of the private sector in the provision of public services does not guarantee greater efficiency, and so the balance between public and private management is not optimal, as shown by Bel and Warner (2008) and Bel et al. (2009) in the case of water and waste services. Other papers support this idea¹ in the specific case of water services (Garcia-Sanchez, 2006; Ordóñez de Haro and Bru-Martinez, 2003) and refuse collection services (Bosch et al., 2000).

However, the evidence is not overwhelming in other countries. In general, in regard to refuse collection services, authors find that private provision generates savings in costs, as in the study McDavid (2008) in Canada², Dijkgraaf and Gradus (2003) in the Netherlands³, Dijkgraaf et al.

¹ Although this is the evidence most found, it must be pointed out that Picazzo-Tadeo et al. (2007 and 2009) find that private management is better.

² This evidence is stronger in small municipalities.

(2003) in Denmark⁴ and Ohlsson (2005) in Sweden. For water services, some authors do not find a superiority of private or public provision in the USA (Bhattacharyya et al., 1995; Wallsten and Kosec, 2005), England and Wales (Saal and Parker, 2001; Bottasso and Conti, 2003; Saal et al., 2007) and Brazil (Faria et al., 2005; Seroa da Motta and Moreira, 2006; Sabbioni, 2008). But, at the same time, other authors find that private provision is preferable in Colombia (Beato and Diaz, 2003), Cote d'Ivoire (Collignon, 2002) and other countries in Africa (Estache and Kouassi, 2002), as well as Honduras (Diaz, 2003) and Argentina (Estache and Trujillo, 2003).

However, most studies are focused merely on the dichotomy between private and public management, and do not consider the different ways of providing public services through functional decentralisation. In addition, previous papers suffer other limitations as regards the samples selected and the number of services analysed. In general, their analyses are carried out in a specific year, and so the real effect is difficult to observe. Furthermore, only one or two services are included in most of the studies, and so the evidence is not generalised for all public services.

From the theoretical point of view, functional decentralisation is defined as the creation of management units that are smaller and more flexible with a business orientation (Aberbach and Rockman, 1999), which makes them more dynamic and enhances public sector efficiency. In addition, outsourcing is expected to improve efficiency, because management is in the hands of specialist suppliers (Cannadi and Dollery, 2005; González et al, 2011) that are accustomed to incorporating performance criteria in public services delivery. Accordingly, we propose the following hypothesis that is the core of the paper: ***“Functional decentralisation and externalisation have a positive effect on local government efficiency”***.

3. MEASURING EFFICIENCY

The literature reveals that a wide range of statistical techniques has been used by different researchers to estimate efficiency. Among these techniques, Data Envelopment Analysis (DEA) is

³ However, the population does not experience this saving directly due to the fiscal system in the Netherlands.

⁴ Private production is used more in small municipalities. In addition, these authors find evidence in the opposite sense, that is, public production is used more by municipalities with high unemployment rates and by those that receive high levels of transfers.

the most commonly accepted because this methodology is superior to estimations that use ordinary least squares, and is consistent with the definition of the production function (Russell, 1985).

The use of DEA techniques when multiple outputs are produced offers advantages such as: (i) allowing the overall analysis of each unit; not requiring prior definition of a production function that needs the creation of a mythical unit with which to perform the comparison, (ii) providing information on the best practices for each inefficient unit, (iii) allowing the inclusion of exogenous variables as uncontrollable inputs, and (iv) not requiring the assumption of fulfilment of statistical hypotheses such as normality and homokedasticity. DEA techniques measure the efficiency of various local governments (called DMUs or units) which provide the same municipal services. Each local government uses a vector X of inputs and produces a vector Y of outputs. The efficiency of a DMU is measured as the maximum ratio of the linear combination of the outputs to the linear combination of the inputs. The maximum is found by selecting the optimal weights associated with the inputs and outputs. The highest possible efficiency reaches the value of 1, indicating a point on the frontier and hence a technically efficient DMU.

In this paper, in line with Prado-Lorenzo and García-Sánchez (2007) and García-Sánchez (2008) the indices of technical efficiency were calculated using the VRS-DEA estimator with the application of bootstrapping, and calculated overall for each of the four sectors. We used Wilson's Software Package for Frontier Efficiency Analysis with R (FEAR) to estimate bootstrapped technical efficiency (Wilson, 1995). In addition, based on our panel data, the analysis of the evolution of efficiency was carried out using the Malmquist Productivity Index, originally developed by Caves et al. (1982a and 1982b). From the point of view of outputs, these indices interpret the differences in productivity as the different capabilities, given the restrictions imposed by technology, for incrementing output without additional consumption of resources (decreasing inputs without reducing outputs).

3.1. Input and output for DEA index

According to Balaguer-Coll et al. (2010), the selection of inputs is based on budgetary variables that reflect municipality costs that in turn reflect the economic structure of Spanish local government expenditures. In this sense, Spanish legislation defines three basic categories: current, capital and financial expenditures. Current expenditures are further divided into four categories, but

this paper takes only three of them into account: personnel expenditure (X_1); current goods and services expenditures (X_2); and current transfers (X_3). Capital expenditures are also broken down into real investments (X_4) and capital transfers (X_5), which refer to payments from institutions to finance certain investments.

The selection of outputs, Table 2, is based on the services provided by each municipality, and the classification of municipal services made by Prado-Lorenzo and García-Sánchez (2006) has been adopted for it. In cases where similarities exist between Spanish municipal services and the areas of competence of other European local governments, the outputs were selected according to several parallels with previous studies.

Table 2. Output variables

MUNICIPAL SERVICES	OUTPUTS
Protection or emergency services	
Police services (public and road safety)	Surface area (Y_1) Number of vehicles en circulation (Y_2)
Fire prevention and extinguishing	Population Density (Y_2)
Utility services	
Paving of public roads and access	
Public street lighting	Surface area (Y_1)
Supply of drinking water and sewerage	
Support services and transportation	
Street cleaning, waste collection and treatment	Surface area (Y_1)
Public transport	Population (Y_3) Surface area (Y_1)
Planning services	
Urban planning	Surface area (Y_1)
Urban management	Taxes on construction (Y_4)
Human and health services	
Social services	Unemployed population (Y_5)
Culture and Sports	Population (Y_3)
Environmental protection and public parks	Surface area (Y_1) Number of economic activities (Y_7)
Health services	Number of economic activities (Y_6)

Source: The authors

The emergency services item includes police and fire services. The police service pursues: (i) public safety through the prevention of crimes and offences of any nature, patrolling the geographical area of the town, and (ii) road safety, facilitating traffic flow. The fire service has as its objective “to reduce the probability of fires occurring and help to limit losses in property and lives in fires that do occur” (Schaenman and Swart, 1974). The probability of the fire spreading will be represented using the variable density of population, in line with Duncombe and Yinger (1993).

Utility services comprise the paving of public roads, street lighting and water supply and sewerage services. The first two services represent the civil construction works necessary to maintain road surfaces in good repair and adequate street lighting. Water supply refers to the continual distribution of water that has been made drinkable and safe by means of various preliminary treatments, adapted to the daily demand of the customers. The purpose of the sewerage service is to remove the sewage originating from both rainfall and from the return of the drinking water supply after it is used, which involves channelling the sewage from the place where it is generated or where user consumption occurs to water treatment plants. All of these services are represented by the street infrastructure surface area, which identifies the kilometres of infrastructure needed for paving and street lighting and to supply water or remove sewage.

The support services and transport group comprises: (i) street cleaning, which consists of the manual or mechanical washing of the town streets and paved surfaces, (ii) collection of municipal solid waste that is generated in households, industries, shops and offices, provided that it is not classified as hazardous⁵; and (iii) public transport, which provides mobility for citizens within the municipal area. In addition, political authorities usually impose obligations on public transport companies, and these obligations can be manifested in different ways: a minimum level of service for those users that do not have other means of transport or maintaining routes that are not economically justifiable.

Urban planning services deal with the architectural ordering of the town, and involve the suitable distribution of residential areas, parks, leisure spaces, etc., as well as verification that the planning proposed is adapted to the town. The importance of this service is due not only to town planning or to ensuring that building regulations are fulfilled, but to the fact that it is the municipal service that generates the most resources for the local council. The taxes linked to urban development are very important for towns, specifically the Real Estate Tax (IBI), the Tax on Construction, Installations and Works (ICIO) and the Tax on the Added Value of Urbanized Land, which together comprise more than 65% of the total tax collection of local government.

⁵ The waste is deposited by the residents in metallic or polyethylene containers distributed throughout the urban surface area that are then emptied into collection vehicles.

Human and health services include social services, upkeep of cemeteries, culture and sports, as well as environmental protection and business regulations in matters of health and consumer protection. In general, these services are meant to attain and guarantee basic welfare for certain social groups with special needs or situations, as well as the general population through control of air quality, etc.

4. EMPIRICAL RESEARCH DESIGN

4.1. Sample for the analysis

The data employed correspond to the 129 local governments whose budgetary information was included in the Spanish Public Sector Database (BADESPE) for the period 1999-2007, inclusive. It includes all provincial capitals and almost all municipalities with a population of 10,000 or more. Other data were obtained from the La Caixa Annual Statistical Report and the Spanish Statistical Institute.

In Spain, there have been important developments in the functional decentralisation⁶ (Cuadrado, 2008) and externalisation processes (Ramió-Matas and García-Codina, 2006), especially in local governments, administrations that have tended to use these processes, instead of direct management, for delivering public services to citizens with the aim of taking advantages of characteristics of the private sector.

The local sphere allows us to obtain a larger volume of data; moreover, these data are more homogeneous than comparisons between different countries (García-Sánchez et al., 2011). In addition, their proximity to citizens and their daily lives allows administrations to know better the needs of their citizens; but, at the same time, these administrations are severely limited in their capacity to satisfy the population's demands owing to their often delicate financial situation. Therefore, this level of public administration may resort to the decentralisation of municipal services as a means of obtaining a larger volume of public funds (Escudero, 2002). All of this may affect the efficiency of local governments, so this makes Spanish municipalities a suitable setting for analysis.

However, the high number of Spanish municipalities and the disparities among them require a criterion be applied to select a sample. The most adequate criterion is related to the size of the

⁶ Cuadrado (2008) shows that the number of public enterprises and entities owned by municipalities and communities raised three-fold in the last decade.

population (Benito et al., 2010b; Navarro-Galera and Rodríguez-Bolívar, 2011). We selected the largest municipalities because they are the only ones obliged by law to provide their citizens with all the services listed in the Local Government Regulatory Law, so the results take into account more services than those that would be considered in a sample using smaller municipalities.

Furthermore, the reform processes postulated by the New Public Management (NPM) paradigm are much better adapted to large cities than to the smallest municipalities, where management is much more informal, and it is the responsibility of a single inhabitant, termed a “non-professional” mayor. These small villages may count on an administrative expert, available one day a week, to resolve specific problems. However, in larger municipalities, the electoral candidates are professional politicians. For these reasons, and in accordance with Prado-Lorenzo and García-Sánchez (2007), it is not necessary to include the smaller ones in this study.

4.2. Dependent and independent variables

The dependent variables correspond to the annual efficiency index obtained by the DEA methodology, as well as the Malmquist index, which represents their evolution.

The independent variables correspond to the externalisation and decentralisation processes carried out in the local administrations of large municipalities. Concretely, we used:

- **TOTAL_DECENTRALISATION**: numerical variable that represents the number of decentralised agencies created in each municipality. This process may be carried out by: **COMPANIES**, number of government owned corporations created by each municipality; **AUTONOMOUS ORGANISATIONS (AAOO)**, number of autonomous bodies created in each municipality; **PUBLIC BUSINESS ENTITIES (PBE)**, number of municipal business entities created by each municipality; **FOUNDATIONS**, number of municipal foundations created in each municipality.
- **EXTERNALISATION**: numerical variable that represents the number of private agencies that have acquired the right to provide public services in each municipality.
- **MIXED_COMPANIES**: numerical variable that represents the number of mixed companies that are created in each municipality. Both public and private sectors are owners of these companies.

In addition, we include the following variables that represent the number of the different agencies created by right-wing parties. The use of decentralised agencies with the aim of increasing the level of public debt is more used by left-wing parties (Cuadrado-Ballesteros et al., 2013). So, maybe the right-wing parties use these entities with the aim of raising the efficiency.

- **RIGHT_TOTAL_DECENTRALISATION, RIGHT_COMPANIES, RIGHT_AAOO, RIGHT_PBE, RIGHT_FOUNDATIONS, RIGHT_EXTERNALISATION, RIGHT_MIXED_COMPANIES:** variables that were calculated as the product of “RIGHT_IDEOLOGY” and the variables that represent the different modes of public services delivery. These variables show the decentralised and externalised entities that have been created by right-wing parties. With them we want to test if right-wing parties are in favour of private control mechanisms in order to improve public sector efficiency (Borge et al., 2008), such as it is commonly assumed.

4.3. Control variables

In order to avoid biased results, several control variables have been included in order to represent the economic and tourist level and political factors. They are as follows:

- **GDP_pc:** income level is measured using the variable gross domestic product per capita. It has been shown that the higher the citizens’ economic level, the greater the income local government collects, and the less pressure exists on politicians and managers to be efficient in the provision of municipal services (Silkman and Young, 1982). In a similar way, De Borger and Kerstens (1996) find that a higher economic level is linked to more inefficiency. However, when Giménez and Prior (2003) analysed the impact of municipal economic level on efficiency, they concluded that differences in economic level are not significant when evaluating efficiency.
- **TOURISM_INDEX:** Mathieson and Passell (1976), Díez-Ticio and Mancebón (2003) and García-Sánchez (2006) explain that seasonal populations have an important impact on municipal services given that they increase the demand for the services designed to satisfy citizens’ needs. However, if we examine other investigations of the tourist condition and overall municipal efficiency, we see there is no agreement in the literature. Bosch et al. (2000) posit that the tourist level of the municipality has an impact on efficiency, specially

related to the refuse collection services, because in some cases, the population of very tourist municipalities is above their normal resident population. But in contrast, Bel (2006) concludes that tourist activity is not significant when it comes to assessing the efficiency of municipalities.

- **RIGHT_IDEOLOGY:** dummy variable that takes a value of 1 if the governing party is conservative, and 0, otherwise. It is commonly assumed that right-wing parties are in favour of introducing budget discipline (Allers et al., 2001) and private control mechanisms in order to improve public sector efficiency (Borge et al., 2008). However, previous evidence is contradictory: Benito et al. (2010a) do not find a significant influence of the political ideology of the incumbents. In contrast, De Borger and Kerstens (1996) observed a direct relationship between progressive parties and local authorities' efficiency.
- **POLITICAL_COMPETITION:** numerical variable that represents political rivalry. It is measured according to Solé (2006) as the difference between the percentages of votes obtained by the parties coming in first and second place. Based on the Weak Government Hypothesis, the intuition is: the higher the competition, the higher the efficiency through higher accountability, because politicians will be pressed to assign better available resources if they have more opponents for the elections. This hypothesis shows that fragmentation has a negative effect on decision-making power, and so it impacts on the ability of governments to be efficient (Roubini and Sachs, 1989; Volkerink and de Haan, 2001; Ashworth et al., 2005 and 2006). In addition, political competition prevents politicians from extracting rents in exchange for services (Fisman and Gatti, 2002), and so they can focus on providing services efficiently.
- **STABILITY:** numerical variable identifying the electoral support the local government obtained in the latest elections, represented by the percentage of seats obtained by the governing party. If the governing party has an absolute majority, it can control expenditure with fewer difficulties in relation to other parties, and so efficiency may not be the criterion used when local governments have to decide how public services are to be managed and a negative relationship between electoral support and efficiency of public services has been found (Balaguer-Coll et al., 2007).

4.4. Research models

In order to achieve the proposed aim of analysing the effect of decentralisation and externalisation processes on the efficiency of local public services, and based on the variables selected, we estimated the following models, in which efficiency indexes depend on the modes of public services delivery (functional decentralisation and externalisation) and on different control variables included to avoid biased results.

$$\begin{aligned} \text{Efficiency} = & \beta_0 + \beta_1 \text{Decentralisation}_{it} + \beta_2 \text{EXTERNALISATION}_{it} + \beta_3 \text{MIXED_COMPANIES}_{it} + \\ & \beta_7 \text{RIGHT_IDEOLOGY}_{it} + \beta_8 \text{POLITICAL_COMPETITION}_{it} + \beta_9 \text{STABILITY}_{it} + \\ & \beta_{11} \text{TOURISM_INDEX}_{it} + \beta_{10} \text{GDP_pc}_{it} + \beta_4 \text{RIGHT_Decentralisation}_{it} + \\ & \beta_5 \text{RIGHT_EXTERNALISATION}_{it} + \beta_6 \text{RIGHT_MIXED_COMPANIES}_{it} + \varepsilon_{1i} + \mu_{1it} \quad [1] \end{aligned}$$

Where “**Efficiency**” represents different kinds of efficiency: (i) annual efficiency; and (ii) the inter-annual variation of efficiency measured by the Malmquist index; “**Decentralisation**” represents each of the different decentralised entities: “COMPANIES”, “AAOO”, “PBE” and “FOUNDATIONS”, and all of them jointly (“TOTAL_DECENTRALISATION”); **i** indicates the municipality and **t** refers to the time period, **β** are the parameters to be estimated, **ε_i** represents the persistent unobserved heterogeneity, **μ_{it}** represents the classic disturbance term.

To estimate these models, we use truncated regressions, which have been shown by Simar and Wilson (2007) to provide better and consistent statistical inference than Tobit regressions. These authors showed that using the Tobit regression (also called a censored regression model) is an inappropriate approach. Moreover, they justified a truncated regression, because of its satisfactory performance in Monte Carlo experiments.

5. EMPIRICAL RESULTS

5.1. Descriptive analysis

Table 3 presents the statistics for the dependent variables. Over the entire period considered, mean annual efficiencies increased by around 97%, although the index presents a lower value when bootstrapping processes are used (these procedures guarantee the validity of efficiency measures against sample modifications). A Malmquist index higher than one indicates a positive evolution of local government efficiency from 1999 to 2007.

Table 3. Descriptive statistics of annual efficiency

	Annual Efficiency (vdhat)		Bootstrap efficiency		Inter-annual variation of	
	Mean	Std.	Mean	Std.	Mean	Std.
1999	.97597 (.006448)	.073235	.95357 (.005996)	.068097		
2000	.97326 (.006573)	.074657	.94457 (.006026)	.068443	1.7145 (0.2340)	2.657677
2001	.97744 (.005881)	.066794	.95349 (.005467)	.062094	2.2867 (0.3552)	4.034701
2002	.96318 (.007393)	.083964	.92767 (.006632)	.075328	1.4857 (0.1941)	2.204465
2003	.96961 (.006001)	.068161	.93054 (.005209)	.059165	2.2749 (0.4621)	5.248171
2004	.97643 (.005897)	.066975	.95194 (.005469)	.062112	1.8760 (0.2942)	3.341100
2005	.97992 (.004341)	.049300	.95093 (.003776)	.042892	1.6168 (0.2422)	2.750954
2006	.97008 (.005849)	.066432	.93256 (.005067)	.057545	1.2506 (0.1082)	1.229392
2007	.96907 (.006011)	.068276	.92729 (.005234)	.059447	1.5639 (0.1733)	1.968850

Table 4 provides the descriptive statistics for independent variables, showing that, on average, each municipality created seven decentralised entities between 1999 and 2007. Of these, two or three were public companies, three or four were autonomous organisations, and at most, one foundation or public business entity was created. Of these municipalities, 49.35% were governed by right-wing parties.

Table 4. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
COMPANIES	2.689061	3.723498	0	27
FOUNDATIONS	0.2170543	0.7983292	0	7
AUTONOMOUS ORGANISATIONS	3.35745	3.309685	0	19
PUBLIC BUSINESS ENTITIES	0.1007752	0.4635036	0	4
TOTAL_DECENTRALISATION	6.364341	6.348831	0	43
EXTERNALISATION	1.796727	0.7462709	0	3
MIXED COMPANIES	0.255814	0.4539323	0	2
POLITICAL_COMPETITION	0.1751352	0.1258471	0	0.6
STABILITY	0.4683917	0.0919993	0.25	0.76
TOURISM_INDEX	412.1728	1085.503	0	9898
GDP_pc	18451.79	5079.808	0	33834.27
		Frequency		
RIGHT_IDEOLOGY		0.4935401		

5.2. Explanatory analysis

Table 5 shows the effect of the different modes of public services delivery on the inter-annual variation in local government efficiency. **Model 1A** takes into account the three general modes of public services delivery: functional decentralisation, externalisation and mixed companies. Only “EXTERNALISATION” is statistically significant at the 90% confidence level, with a negative effect on the level of annual efficiency. Of the control variables, “POLITICAL_COMPETITION”

and “TOURISM_INDEX” are statistically significant at 95% and “GDP_pc” is significant at 90%; all of these have a negative impact on the efficiency index

Models 2, 3, 4 and 5 show the results for each type of decentralised entity. In **Model 2A**, the statistically significant variables in the analysis are “COMPANIES” and “EXTERNALISATION”, at the 90% confidence level, and with a negative effect on the annual efficiency. “POLITICAL_COMPETITION”, “TOURISM_INDEX” and “GDP_pc” are also statistically significant at 95%, also with a negative effect on the efficiency index. For **Model 3A**, the statistically significant variables are “FOUNDATIONS” and “EXTERNALISATION”, with a negative impact on the annual efficiency of local governments. In addition, “POLITICAL_COMPETITION” and “GDP_pc” are significant at the 95% and 90% confidence levels, respectively. All of these negatively affect the level of annual efficiency of local governments. For **Model 4A**, “EXTERNALISATION”, “POLITICAL_COMPETITION” and “TOURISM_INDEX” are statistically significant at 90%, 95% and 99%, respectively. Again, all have a negative effect on the efficiency index. Autonomous organisations have a positive effect on efficiency although this is not statistically significant. Finally, in **Model 5A**, the relevant variables are “PBE” and “RIGHT_PBE”, at the 99% confidence level, “EXTERNALISATION” at 90% and “POLITICAL COMPETITION” at 95%. All of them have a negative effect on the annual efficiency, except the public business entities created by right-wing governing parties.

These results show that private sector involvement in public services delivery worsens efficiency in Spanish local government, rather than improving it. Therefore, the main justification advanced for incorporating the private sector in the provision of local services is rejected (as regards Spain) because externalisation has a negative effect on the level of annual efficiency, while mixed companies have no statistically significant bearing on the analysis. The same results are also applicable to the functional decentralisation process: a negative impact on efficiency is caused by all kinds of entities, especially companies, foundations. However, when public business entities are created by right-wing parties, they have a positive impact on the annual efficiency of the local government. In addition, we note that efficiency is lower in municipalities that are characterised by a high degree of political competition.

Table 5. Empirical results

	Effects of public services delivery on annual efficiency					Effects of public services delivery on inter-annual variation of efficiency				
	Model 1A	Model 2A	Model 3A	Model 4A	Model 5A	Model 1B	Model 2B	Model 3B	Model 4B	Model 5B
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
TOTAL_DECENTRALISATION	-0.000597					-0.009136				
COMPANIES		-0.00127***					0.00589			
FOUNDATIONS			-0.00782**					0.25740		
AAOO				0.000204					-0.03843	
PBE					-0.023126*					-0.05781
EXTERNALISATION	-0.006218***	-0.0066***	-0.00584***	-0.00645***	-0.00613***	0.23355	0.23093	0.21937	0.24895	0.22822
MIXED_COMPANIES	0.006748	0.005612	0.007004	0.00679	0.00463	-0.27463	-0.27539	-0.23717	-0.23794	-0.28374
RIGHT_IDEOLOGY	-0.016405	-0.014702	-0.00177	-0.0136	-0.01433	0.23004	0.06139	0.10423	0.19413	0.1205
POLITICAL_COMPETITION	-0.068785**	-0.06475**	-0.06625**	-0.06943**	-0.06195**	-0.20771	-0.38808	-0.26093	-0.36322	-0.26852
STABILITY	0.035203	0.030435	0.03234	0.03643	0.01928	1.70322	1.935	1.86741	1.8997	1.6903
TOURISM_INDEX	-5.26E-06**	-4.71E-06**	-1.00E-06	-7.02E-06*	-2.70E-06	-0.000012	-0.000072	-0.00013	-5.98E-06	-0.00005
GDP_pc	-8.55E-07***	-9.69E-07**	-8.67E-07***	-7.34E-07	-7.34E-07	6.53E-06	9.93E-06	0.00001	5.39E-06	0.00001
RIGHT_TOTAL_DECENTRALIZATION	0.001113					-0.01393				
RIGHT_COMPANIES		0.00174					0.00405			
RIGHT_FOUNDATIONS			-0.00831					-0.1487		
RIGHT_AAOO				0.00178					-0.02456	
RIGHT_PBE					0.03777*					-0.3477
RIGHT_EXTERNALISATION	0.006106	0.0063	0.00305	0.00573	0.00644	-0.17654	-0.12862	-0.11813	-0.16626	-0.15316
RIGHT_MIXED_COMPANIES	-0.014462	-0.01403	-0.01833**	-0.01417	-0.01274	0.8539***	0.9225***	0.8875***	0.8284***	0.9194***
d01	0.001586	0.00191	0.001823	0.00119	0.00135	0.56180	0.202138	0.26879	0.14735	0.20071
d02	-0.0236*	-0.02317*	-0.02329*	-0.024145*	-0.02387*	-0.24316	0.75565	0.8184	0.70984	0.7552***
d03	-0.021136*	-0.02061**	-0.01994**	-0.0216*	-0.02077*	0.55264	-0.0535	0.00879	-0.0921	-0.0542
d04	0.001097	0.00176	0.0039	0.0003	0.00122	0.1561	0.7286	0.79536	0.69835	0.7244***
d06	-0.01617***	-0.01497***	-0.01218	-0.01734**	-0.0162**	-0.47767	0.32161	0.34765	0.30027	0.31874
d07	-0.0215921**	-0.0199874**	-0.0162781***	-0.02294*	-0.02134**	-0.14013	-0.3302	-0.32163	-0.3364	-0.33218
_cons	0.9792882*	0.9826596*	0.9737542*	0.9731865*	0.9820339*	0.5217489	0.1513473	0.1039804	0.3749493	0.26408

*, ** and *** represents significance at 99, 95 and 90% of confidence level

Models 1B-5B show the effects of the modes of public services delivery on the inter-annual variation of the efficiency. In all models, the only relevant variable is “RIGHT_MIXED_COMPANIES”, with a positive effect on this variation. Thus, the use of mixed companies by right-wing parties does increase the inter-annual efficiency in Spanish local government. This means that the hypothesis of this paper could be only partially accepted.

6. DISCUSSION OF RESULTS AND CONCLUDING REMARKS

The empirical evidence compiled to date is contradictory as regards the best form of management for public services, and no clear relationship has been found between the form of managing public services and the efficiency of local governments. In addition, most studies in this area have focused only on the dichotomy between private and public management, and have not considered the different forms of providing public services through functional decentralisation. Moreover, these studies often present other limitations: in general, their analyses are carried out only for one specific year, and so the real effect is not apparent; and/or they focus only on one specific region; and/or only one or two services are addressed. These factors mean that the evidence obtained cannot be generalised to all public services.

Therefore, the aim of the present study is to analyse the effect of processes of decentralisation and externalisation on the efficiency of Spanish public services, in order to contribute to the empirical evidence available on this question. For this purpose, we examined 129 Spanish municipalities with populations of over 10,000 for the period from 1999 to 2007, inclusive. Furthermore, to obtain more precise findings, the different forms of decentralisation were disaggregated according to the legal form of the organisation (corporations, autonomous organisations, public business entities and foundations).

Our results show that externalisation is harmful to efficiency in Spanish local government, which is in accordance with the popular view of this question, i.e. that the involvement of the private sector in the provision of public services does not guarantee greater efficiency, such as Bel and Warner (2008) and Bel et al. (2009) in the case of waste disposal and water services in Spain, by Garcia-Sanchez (2006) and Ordóñez de Haro and Bru-Martinez (2003) for water services in Spain, and by Bosch et al. (2000) for waste disposal services in Spain. This conclusion has also been reached in studies elsewhere, for example in the USA (Bhattacharyya et al., 1995; Wallsten and

Kosec, 2005), England and Wales (Saal and Parker, 2001; Bottasso and Conti, 2003; Saal et al., 2007) and Brazil (Faria et al., 2005; Seroa da Motta and Moreira, 2006; Sabbioni, 2008).

Moreover, our analysis reveals that, in general, the decentralisation of public services delivery impact negatively on the efficiency of local governments in Spain. It means that these agencies produce poor coordination, overlapping functions and the misuse of resources (Rhodes, 1994). In this respect, according to Talbot and Johnson (2007) and Andrews and Boyne (2009), the evidence suggests that large bureaucracies are cheaper and that regrouping processes should be encouraged.

Only the public business entities created by right-wing parties may improve the annual efficiency in Spanish local governments, as well as, the mixed companies created by the same parties could raise the inter-annual variation of efficiency. Thus, to a certain extent, there is a relation between the political ideology of the governing party and the level of local government efficiency, as reported by De Borger and Kerstens (1996). However, their results are contrary to ours.

Finally, our findings show that annual efficiency is lower in municipalities that are characterised by high political competition, as was expected, because political competition prevents politicians from extracting rents in exchange for services (Fisman and Gatti, 2002), and so they must focus on providing services efficiently and on increasing their decision-making power, and this again impacts on local government efficiency (Roubini and Sachs, 1989; Volkerink and de Haan, 2001; Ashworth et al., 2005 and 2006). GDP was not found to be very significant in our analysis, which is in accordance with Giménez and Prior (2003). The tourism index impacts negatively on the annual efficiency, according to Bosch et al. (2000).

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