

# Local privatization, intermunicipal cooperation, transaction costs and political interests: Evidence from Spain

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## Abstract

Several empirical studies have analyzed the factors that influence local privatization. Variables related to fiscal stress, cost reduction, political processes and ideological attitudes are the most common explanatory variables used in these studies. In this paper, we add to this literature by examining the influence of transaction costs and political factors on local governments' choices through new variables. In addition to this, we consider the role of additional aspects, such as intermunicipal cooperation as a potential alternative to privatization in order to exploit scale economies or scope economies. We consider two relevant services: solid waste collection and water distribution. Results from our estimates show that privatization (that is, contracting out to a private firm) is less common for water distribution than for solid waste collection. Higher transaction costs in water distribution are consistent with this finding. Furthermore, we find that municipalities with a conservative ruling party privatize more often regardless of the ideological orientation of the constituency. This shows that those political interests able to influence local elections are more important in determining the form of delivery than is the basic ideological stance of the constituency. Finally, we find that intermunicipal cooperation is an alternative to local privatization.

**Key words:** Privatization, contracting-out, local governments

**JEL codes:** L33, R51, H72

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## Introduction

Many countries have instituted privatization of the delivery of local public services in the last decades of the twentieth century. Following this lead, an increasing number of municipalities turned the delivery of important local services, such as solid waste collection and water distribution, over to private providers. Private delivery of solid waste collection has increased with special intensity in the Scandinavian countries and has increased in other European countries, such as the Netherlands and Spain (Bel, 2006). Private distribution of water was systematically introduced in England and Wales in the early 1990s, and has significantly expanded throughout this decade in southern European countries such as France, Spain and Italy (Bel, 2006). Private delivery of water has been less common in the US and in Central and Northern Europe, where public delivery remains the hegemonic form.

Nowadays, the geography of private delivery of local public services shows a wide diversity. On the one hand, we observe great diversity among countries in private delivery. On the other hand, we also find wide diversity in the extent of local privatization within each country. Hence, it is clear that –even if institutional factors at the national level can explain differences in levels of privatization- other factors must influence local government decisions on privatization.

In the last two decades, many empirical works have addressed the question of why governments do, or do not, privatize local services. As shown in the recent survey by Bel and Fageda (2007), factors related to fiscal stress, cost reduction, political processes and ideological attitudes are the most common explanatory variables used in these studies. In this paper, we add new variables to examine the influence of transaction costs and political factors. Besides the standard consideration of variables reflecting political interests and ideological attitudes, we contribute to the literature on privatization decision by jointly considering the effects of politics and ideology. While political factors and ideological attitudes have been a part of previous studies, this study considers the interaction between the two.<sup>†</sup>

In order to have a more complete picture of the decision process, we also include some alternatives to privatization, such as intermunicipal cooperation. Economies of scale or scope are considered one of the major advantages of local privatization (Donahue, 1989). Recent empirical evidence suggests that local governments can use intermunicipal cooperation to exploit economies of scale in solid waste collection (Warner and Hefetz, 2002a; Bel and Costas, 2006). One of the contributions of our empirical analysis is to test whether intermunicipal cooperation is an alternative to privatization.<sup>‡</sup> As far as we know, ours is the first analysis to empirically consider intermunicipal cooperation as a potential explanatory factor in privatization.

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<sup>†</sup> Joint effects of political interests and ideological attitudes have been considered in Bel and Miralles (2006) when analyzing the economics and politics of local public services financing.

<sup>‡</sup> It is worthwhile noting that whereas intermunicipal cooperation in the US is not compatible with privatization (Warner and Hefetz, 2002a, 2002b; Levin and Tadelis, 2005), intermunicipal cooperation in Spain –as well as in most European countries- is compatible with private production. Because of this,

In our empirical analysis we use a 2003 sample of 559 Spanish municipalities. We use extensive information on two of the most relevant local services: solid waste collection and water distribution. Results from our estimates show that privatization is more common for solid waste collection than for water distribution. This finding is consistent with the fact that transaction costs are higher in water distribution because asset specificity is an important characteristic of water networks. Furthermore, we find that municipalities with a conservative ruling party employ private production more often regardless of the basic ideological orientation of the constituency. Our main conclusion here is that even if both politics and ideology influence the privatization decision, political interests have more influence than ideological attitudes.

Finally, we find that intermunicipal cooperation is an alternative to local privatization, since intermunicipal cooperation is negatively related with privatization. This happens in solid waste collection, where municipalities can cooperate to exploit economies of scale without using private production to aggregate output. In the same way, intermunicipal cooperation is negatively related with privatization in water distribution, where municipalities can cooperate to exploit economies of density derived from a joint network without using private firms. Interestingly, cooperation in solid waste occurs in much smaller municipalities than is common for instances of joint deliver of water. This is consistent with the fact that economies of scale (related to output) are present in solid waste, whereas economies of density (related to network concentration) are present in water distribution.

We organize the rest of the paper as follows. In section 2, we review the background provided by the empirical studies that analyze factors explaining local privatization. Section 3 presents our empirical strategy; here we provide information on data and sources, and we display and explain our empirical model. In Section 4, we present the results from the estimation of our empirical model and discuss the implications of our main results. Finally, in section 5 we summarize the main conclusions from our empirical analysis.

### **Theoretical and Empirical Background.**

A growing body of theoretical work has discussed privatization of local services in the last quarter of the twentieth century. Among the approaches most prone to endorsing privatization, Public Choice was the first approach to analyze choices in local services delivery. Seminal work by Niskanen (1971) proposed that when politicians and bureaucrats monopolize public services delivery, overproduction and inefficiency is likely to be the outcome. Savas (1987) extended the Public Choice approach to the privatization of local services, and suggested that policy makers extract political and/or material rents from managing local public services. Following this approach, we can infer two basic hypotheses: contracting out by local governments will improve technical efficiency and will provide lower costs in the delivery of services.

Other theoretical approaches have also stressed the effect of costs in the service delivery choices of local governments. Transaction costs (administrative costs as well as costs from incomplete contracts) are important when a municipality chooses to make or buy a service (Williamson 1979, 1999) and factors such as monitoring and control play a central role (Sappington & Stiglitz, 1987). From these theoretical works, it follows that the conditions that influence the level of transaction costs should be central in determining when a local service will be successfully

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decisions on engaging in intermunicipal cooperation and/or privatizing are not taken simultaneously. Section 3 deals in detail with this issue.

privatized. Hence, asset specificity and ease of measurement are key factors in determining contract completeness and the difficulty of performance monitoring (Brown and Potoski, 2003; Levin and Tadelis, 2007). Overall, the following core hypothesis emerges. Privatization is more likely to be chosen when transaction costs involved in the delivery of the service are not huge.

Another important approach has emerged from property rights theory. The theory of incomplete contracts provides a useful analytical framework for studying situations in which contracting is a complex operation (Grossman and Hart, 1986; Hart and Moore, 1990). Within this framework, Hart, Shleifer and Vishny (1997) show that--with private production--the manager has incentives to reduce costs without concern for quality erosion. Therefore, privatization will likely reduce costs, but can also deliver a lower quality of service. As stressed by Whinston (2003), one must confront the richness of predictions from property rights theory with the lack of available data to test them. Nonetheless, we can test some hypothesis within this framework. For instance, Hart, Shleifer and Vishny (1997) propose the hypothesis that politicians have two alternatives for rent-seeking through service delivery. On one hand, those who look for political benefits from over-employment might prefer public production. On the other hand, policy makers looking for political benefits from material transfers (such as campaign funding, funding of party organization expenses, etc.) might prefer privatization. In short, a core hypothesis emerges: service delivery choice will be pragmatic rather than ideological, and interest groups will have influence on the delivery choices made by local policy makers.

While there is no absolute agreement on what factors might influence local privatization, we can sensibly group the hypotheses derived from the theoretical approaches mentioned above into two economic and two political sets of variables. Economically, governments may be inspired by some combination of fiscal restraints and anticipated lowered costs, while politically, leaders may be moved by loyalty to an ideology or a desire to win the support of key interest groups.

### Fiscal Restrictions

Since the late 1970s, consistent with suggestions in Tiebout (1956), a taxpayers' backlash toward increasing local exactions has emerged. In addition, an increasing number of supramunicipal legislators have introduced legislation limiting increases in local taxation and local budget debt. Most studies of privatization included fiscal variables designed to measure the effects of such restrictions, and the usual hypothesis is that there is a positive relation between fiscal constraints and privatization. The variables more commonly used to test the hypothesis that fiscal restrictions influence (positively) privatization are the following: tax burden, legal limitations on local tax levels and the size of transfers from the central to local governments.

Early studies for the US, those where data collection was completed in the 1980s, frequently find that financial restrictions on local governments influence the choice of production form (e.g. Ferris, 1986; Feldman, 1986; Morgan, Hirlinger and England, 1988; Stein, 1990; Miranda, 1994; Hirsch, 1995). Among these early studies, only McGuire, Oshfeldt & van Cott (1987), and Chandler and Feuille (1994) infer from their data that fiscal stress is not a significant influence on the privatization choices of local governments. In more recent studies for the US, those where data collection occurred from 1992 to 2004, fiscal stress appears as a significant explanatory factor only in the works of Kodrzycki (1998), Brown, Potoski and van Slyke (2008) and Hebdon and Jalette (2008), which also includes observations for Canada. Among the studies for European countries, only Dijkgraaf, Gradus and Melenberg (2003) find fiscal restrictions to be relevant in local service delivery choices. On the contrary, Bel and Miralles (2003) and Miralles (2006) find no influence from fiscal restrictions. It is worthwhile noting that taxpayers' revolts

have been more moderate in Europe, and supramunicipal regulations limiting local taxation and debt have been less restrictive in Europe than in the US.

### Economic Efficiency

Within the academic literature, two main explanations arise to link privatization to cost reduction. One proposes that privatization works by introducing competition where there is a public monopoly (Savas, 1987). Hence, the potential for reducing costs may be higher in larger and metropolitan urban areas where the availability of external providers is higher. Levin and Tadelis (2007) find that large and urban areas tend to externalize production to private firms more often, while smaller towns tend to externalize to public agencies. In the same way, results from the works of Warner and Hefetz (2002a) and Hebdon and Jalette (2007) imply that suburbs of metropolitan areas privatize more often than do rural areas. However, central cities privatize less than suburban areas.

On the other hand, the possibility of exploiting economies of scale is especially important when the public service has been delivered over a suboptimal jurisdiction (Donahue, 1989). Privatization can be a useful tool in aggregating jurisdictions for the delivery of the service, because one firm can deliver services in several towns, thus operating at a more efficient scale. Thus, benefits from privatization due to the lower cost of operating at optimal scale may be especially important in smaller cities. The population of a city and demand for the service (when available) are the variables usually used for testing whether the possibility of exploiting scale economies is relevant to the privatization of local services. Evidence in studies that analyze just one service (rather than several) provides more support to the hypothesis that scale economies are a major determinant of privatization. Indeed, results from McGuire, Oshfeldt and van Cott (1987) for school buses and Feldman (1986) for urban buses support the hypothesis, as do the studies of Hirsch (1985), Stein (1990), Bel and Miralles (2003) and Dijkgraaf, Gradus and Melenberg (2003) for solid waste collection. In contrast, most of the studies that consider a broad range of services do not find significant influence from scale variables. In sum, the possible exploitation of scale economies vary greatly between services.

Finally, it is worth noting that some recent studies pay special attention to the role of transaction costs in the delivery choices of local governments. In this sense, Menard and Saussier (2000), Levin and Tadelis (2007), Walls, Macauley and Anderson (2005), and Brown, Potoski and van Slyke (2008) argue that the likelihood that production will be externalized is higher for services with low specific assets and whose performance is easily measurable. Additionally, some studies (Nelson, 1997) argue that the positive relationship that they find between privatization and population homogeneity is due to the lower transaction costs associated with such homogeneity.

### Political Interests and Ideological Bias

Non-economic factors, specifically political processes and ideological attitudes that might explain the decision to privatize local services,<sup>§</sup> have also been adopted as variables. Within a democratic environment, two main motivations guide politicians in their decisions. On the one hand,

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<sup>§</sup> Beyond the decision to privatize local services, there is an interesting recent literature that analyzes the politics of the formation of public or private governments (Carr and Feiock, 2004). In this view, creating private governments is a solution to collective action problems that emerges because of a political process of crafting a relational contract among members of a community (Baer and Feiock, 2005).

politicians seek to win elections and obtain governmental positions. On the other hand, they have preferences for some policies over others according to their ideological attitudes.\*\*

Within the domain of political interests, the decision to privatize is dependent on the existence and the strength of pressure groups having a particular interest in the rents derived from a given form of service delivery. The variables more usually considered in the literature for capturing this effect are,†† the degree of unionization of public employees and the income level of households. In this field, it is commonly assumed that public employees and unions are in favor of internal production, while industrial interests have a greater preference for privatization. Early studies for the US usually find significant influence of interest groups: McGuire, Oshfeldt & van Cott (1987); Dubin and Navarro (1988), Miranda (1994), Chandler & Feuille (1994), Hirsch (1995), Greene (1996), Nelson (1997). More recent studies for the US find significant influence from unions (Warner and Hebdon, 2001; Levin and Tadelis, 2007) or high-income households (Warner and Hefetz, 2002a).‡‡ Miralles (2008) is the sole work that analyzes the influence of interest groups on service delivery choices in a European country. He finds that the relative strength of industrial users influences privatization, and that stronger industrial groups promote privatization.

Ideology may also influence privatization. Since conservative parties have been associated with more pro-private business values, conservative governments should be positively associated with privatization. Similarly, because progressive parties are usually linked with collective values, they should be associated with public production. The influence of the ideology is usually captured in the literature through either the partisan affiliation of the local government or the percentage of progressive (or conservative) votes in elections. It is generally expected that there exists a negative relationship between privatization and progressive governments and the percentage of progressive votes. Among the studies for the US, ideology is found to be a relevant explanatory factor of privatization in the works by Dubin and Navarro (1988), Walls, Macauley & Anderson (2005) and Zullo (2005) for solid waste collection. Among the studies of European countries, Dijkgraaf, Gradus & Melenberg (2003) examining solid waste collection obtain a similar result, whereas Bel and Miralles (2003) and Ohlsson (2003) do not find a significant relationship.§§

The hypotheses most frequently considered and tested in the empirical literature studying factors explaining local privatization can be summed up in four statements. First, we expect that

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\*\* This double dimension of the politician in a democratic system has been named the *citizen-candidate* approach. Osborne and Slivinski (1996) and Besley and Coate (1997) offer theoretical insights; Levitt (1996) and Lee, Moretti and Butler (2004) offer empirical support.

†† Other variable used in several studies is the percentage of public employees over population. On this we must recall that the determination of service delivery choices and the percentage of public employees is done simultaneously. Hence, the variable for the weight of public employees is statistically biased. Indeed, a more intense use of external suppliers implies *per se* a reduction in the number of public employees. Because of this, we do not consider here results obtained from using the variable percentage of public employees. A complete discussion of this methodological issue can be found in Bel and Fageda (2007)

‡‡ Still for the case of the US, it is interesting to note that, following the proposition that politicians obtain the support of public employees when production of services is done internally, Lopez-de-Silanes, Shleifer & Vishny (1997) test the hypothesis that political patronage affects service delivery choices. In this way, they find that state laws that impose accountability requirements in contracting for personnel encourage privatization. However, later studies by Kodryzcki (1998); Walls, Macauley and Anderson (2005) and Zullo (2005) test this hypothesis and do not confirm these results.

§§ Miralles (2006) obtains mixed results. Christoffersen and Paldam (2003) find no relation between ideology and privatization in their univariate study for Denmark.

privatization increases when fiscal constraints are more binding. Second, privatization may be aimed at reducing costs, either through competition or by the exploitation of scale economies. Third, the relative strength of different interest groups, such as unions or industrial business, influences local governments' service delivery choices. Finally, conservative governments will be more prone to privatize local services, while progressive governments will favor the public production of the service.

## The Empirical Strategy

In this section, we provide information on the data available for our research and the corresponding sources. Next, we set up our empirical model. In doing so, we take into account the most important hypotheses established in the theoretical literature and tested in the empirical works that we have reviewed above.

### Data and Sources

The sample is based on municipalities in Spain that filled out the *Survey on Production of Local Services*, a survey designed and carried out by the authors' research unit. The survey asked Spanish municipalities of more than 2,000 inhabitants about two local services; solid waste collection and water distribution. The implementation of the survey has obtained data for 539 municipalities in the case of solid waste collection services and for 546 municipalities in the case of water distribution. The empirical analysis aggregates observations for both local services, so that each municipality of the sample may involve one or two observations. As to how representative our sample is, the municipalities included are all part of the 24.9% of all Spanish municipalities with population above 2,000, and the overall population included comprises 74.2% of the total population in municipalities with more than 2,000 inhabitants. It is worthwhile noting that our sample includes all municipalities with population above 30,000 inhabitants.<sup>\*\*\*</sup> Information contained in the survey is for 2003 and includes the form of delivery (i.e. whether it is publicly or privately produced), the level (local or supralocal) at which the service is produced and, if applicable, the year when the service was contracted for the first time.

We have obtained population data for each municipality in 2003 from the Spanish Statistics Institute. Information about the fiscal burden at the municipality level has been obtained from the Ministry of Treasury. Data for this variable refer to 2002 for municipalities of more than 2,000 inhabitants. It must be noted that the fiscal burden a year prior to a decision may have an effect on the choice made by the local government. Data for the relative strength of industrial interests is available in the 2004 Spanish Economic Yearbook published by La Caixa, a Spanish savings bank. The web site of the Spanish Ministry of Domestic Affairs provides data for electoral results (national, regional and local) at the city/town level.

### The Empirical Model

The empirical model considers aspects that have been commonly analyzed in the existing literature explaining local privatization. Thus, we include explanatory variables that capture the demand of local services at the municipal level, fiscal stress and interest group pressures. Additionally, we take into account the role of transaction costs. Finally, measures concerning

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<sup>\*\*\*</sup> Bel (2006) contains more detailed information on the sample. The rate of response for the survey was 24,9% for municipalities over 2,000 inhabitants, and 100% for municipalities over 30,000 inhabitants.

political and ideological factors are included in different specifications of the equation. Altogether, the empirical model is as follows:

$$Y_i = a + \beta_1 pop_i + \beta_2 pop_i^2 + \beta_3 coop_i + \beta_4 transaction\_costs + \beta_5 fiscal\_burden_i + \beta_6 industrial\_interests_i + \beta_7 (political\ and\ ideological\ factors)_i + \varepsilon_i \quad (1)$$

where  $Y_i$  is a dummy variable for the production form of the considered local service. This variable takes a value of 1 when the service is delivered under private production form setting, and it is 0 when delivery is public.

We construct the explanatory variables included in equation (1) as follows. We include a variable for population of the municipality,  $pop$ . This variable is a proxy for the demand for the local service. In this regard, we expect that the relationship between the demand size at the local service level and the decision to privatize have an inverse-U shape (Bel & Miralles, 2003). The square of the population,  $pop^2$ , appears in equation (1) to test for the inverse U-shape hypothesis.<sup>††</sup> Indeed, small cities afford high supervision costs and modest quantitative potential benefits from privatization. Nevertheless, the largest municipalities do not exploit scale economies from privatization and they usually have strong managerial capacities.

Additionally, we include a variable for municipalities that use intermunicipal cooperation to produce the local service,  $coop$ . We construct this variable as a dummy variable that takes a value of 1 when the service is produced at the supramunicipal level, while it stands at 0 when the service is produced at the municipal level. As we mentioned above, municipalities may use intermunicipal cooperation as an alternative means of exploiting scale economies.

It is worthwhile noting that intermunicipal cooperation in Spain –as well as in most European countries- is compatible with private production. On the contrary, intermunicipal cooperation as it is understood in the US (e.g. Warner and Hefetz, 2002a, 2002b, Levin and Tadelis, 2007) is usually not compatible with private production, although it is seen as a form of contracting out. The main divergence between these different meanings for ‘intermunicipal cooperation’ is that in the US local governments contract out with other local government or public agencies. Therefore, delivery is in charge of an external (public) producer. In Spain, intermunicipal cooperation does not involve municipal governments contracting out the service to another government or public agency. Instead, they engage in city partnerships under a joint authority (either a supralocal institution –at county or province level-, or a single purpose agency) in governance of which all involved governments play a role.<sup>†††</sup> Within this framework, the choice is made of using private production, public production or mixed firms for the delivery of the service. Hence, cooperation and privatization are not incompatible (Bel and Fageda 2006). In fact, production form choices made by municipalities that engage in cooperation are diverse. Among all municipalities that elect intermunicipal cooperation in solid waste collection, 51% use private production; 39% use public production and 10% use mixed firms. With respect to water

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<sup>††</sup> Note that including this variable does not pose a problem of multicollinearity, which would only be an issue if the sample size were within a very small population range. It is worth noting that other works (e.g. Warner 2006) have found inverse U-shape curve for local privatization too. However, in Warner’s case, the curve is related to the geographical continuous metro-suburbs-rural, whereas in our case the curve relates to the city/town population.

<sup>†††</sup> Levin and Tadelis (2005) refer to exceptional cases of this type of city partnerships or public agencies partnerships in California, and they choose to consider this a special form of public sector contracting. Instead, they are much more frequent in continental Europe, and specially in France, the Netherlands and Spain (Kelly, 2007).

distribution, among all municipalities that elect intermunicipal cooperation 30% use private production, 62% use public production and 8% use mixed firms. Thus, it is clear that many communities that engage in municipal cooperation make a choice other than public production.

We measure the role of transaction costs in local service delivery choices using a variable for the considered service, *transaction\_costs*. This variable is constructed as a dummy variable that takes a value of 1 when the service is water distribution and 0 when solid waste collection is being considered. As we mentioned above, the transaction costs of buying (and not producing internally) the service should be higher for water distribution than for solid waste collection. Indeed, the network nature of water distribution makes the specific assets associated to this service much more important than are those of solid waste removal. This is consistent with evidence in the literature showing that water distribution is characterized by higher transaction costs than solid waste collection (Brown and Potoski, 2005).<sup>§§§</sup>

A variable for fiscal burden, *fiscal\_burden*, is also considered. According to legal specifications in the Spanish budgetary process, we construct this variable as the sum of the financial expenditures (chapters 3 –interests- and 9 –amortization- of the expenditures budget) over the sum of ordinary revenues of the local government (chapters 1 through 5 of the revenues budget). Data on fiscal burden are not available for nine municipalities. Because of this, 18 observations have been excluded from the sample. Data for other nine municipalities are available only for 2001. Recall that according to theoretical insights and empirical evidence, the decision to privatize may be more likely as the budget constraints of the municipality become more severe.

We also control for the possible influence of industrial interests in favor of privatization, *industrial\_interests*. This variable reflects industrial activity in the municipality by measuring the dimension of industrial activity in the city/town relative to the whole country level.

Rather than using a single political variable, we seek to estimate the distinct effects of political and ideological influences by creating two variables, which can be looked at separately. In this way, we estimate three specifications of equation (1) and we differentiate them according to the political and ideological factors considered.

Indeed, we first consider the political affiliation of the mayor, *mayor*. We construct this variable as a dummy variable that takes a value of 1 when the mayor belongs to a conservative party and 0 when the mayor belongs to a progressive party. We exclude from this estimation those municipalities whose mayors do not belong to a standard political party (parliamentary representation either at national or regional -state- level), since we cannot precisely infer where such mayors lie on the conservative / progressive continuum. We cannot include the variable of independent mayors as a dummy variable in equation (1) because mayors in this set are very

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<sup>§§§</sup> In this way, Brown and Potoski (2005) measure asset specificity and ease of measurement for 64 local services in the US. They build an indicator ranging from one (low specificity, or easy measurement) and 5 (high specificity, and difficult measurement). Concerning the services we study here, they find asset specificity of 3.94 and ease of measurement 2.44 for water distribution, whereas assets specificity is 3.00 and ease of measurement 2.06 for residential solid waste collection. For commercial solid waste collection their ratings are 3.06 and 1.97 respectively (Brown and Potoski, 2005: 336-337). More recently, Levin and Tadelis (2007) have built indicators on contract difficulty, as perceived by a sample of city managers. They find that services related to water contract difficulty is over the average, whereas for all services related to waste (collection as well as disposal) contract difficulty is below the average. Finally, the literature provides evidence that contract terms are longer in water are longer than in solid waste collection (Bel 2006, Johnson, McCormally and Moore 2002), thus reflecting higher relevance of sunk costs in water.

divergent from the ideological point of view. Moreover, quite often the independent (from the conventional parties) lists<sup>\*\*\*\*</sup> are based on a strong personality of the candidate to mayor (the person in the top position in the list). There is a minority of municipalities with ‘independent’ mayor: only 57, which represents 10.2% of the municipalities in our sample (559). The frequency of independent mayors is much higher in the less populated municipalities (13.1% of municipalities below 20,000 inhabitants). It decreases in the intermediate municipalities (8.9% of municipalities between 20,000 and 50,000), and reaching the lowest frequency in the largest cities (6.1% in municipalities above 50,000).

Second, we consider the ideological position of the constituency in national elections, *ideology*. We construct this variable by measuring the mean percentage of votes obtained by conservative parties in the national elections of 2000 and 2004. In our view, the ideology of the constituency is reflected in its stance in national elections. This is so especially if we remember that Spain has a parliamentary system, and the prime minister is elected by the Parliament. Hence, national elections are the most ideologically motivated elections in Spain. One might wonder whether elections to the European parliament are more ideologically driven than national elections. However, abstention in European elections (54.86% in 2004) is very important, and substantially higher than abstention in national elections (24.34% in 2004). No doubt, national election is widely seen as the most important election in Spain.

On the other hand, the political affiliation of the mayor may differ from the basic ideology the constituency demonstrates in national elections. In fact, a mayor’s affiliation might also depend on the relative strength of interest groups such as industrial unions, trade unions, and coalitions at the local level, etc. In this regard, it is worth noting that the correlation between the variables *mayor* and *ideology* is 0.53. This indicates that we should not consider these two variables jointly since multicollineality may prevent identifying each individual effect. However, these variables may be capturing different aspects of the decision since they are far from being identical.<sup>†††</sup>

Furthermore, we construct complex political variables that combine *mayor* and *ideology* variables. Hence the following dummies are created: *C-C*: Conservative mayor – Conservative constituency, *C-P*: Conservative mayor – Progressive constituency, *P-C*: Progressive mayor – Conservative constituency, *P-P*: Progressive mayor – Progressive constituency. A conservative constituency is one that gives conservative parties a majority of votes in national elections (and the opposite for progressive constituency). Concerning the probability of privatization, we expect that  $CC > CP > PC > PP$ . Indeed, municipalities with-conservative mayors will privatize more than municipalities with progressive mayors regardless of the ideological stance of the constituency. This would imply that interest groups might be successful in promoting privatization through a conservative mayor, even if the constituency is progressive oriented (and the opposite).

Table 1 summarizes the description of the variables used in the empirical analysis and their expected relationship with the form of production used by local governments.

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<sup>\*\*\*\*</sup> It is worth noting that local elections in Spain are based on party lists. In this way, independent parties are those political parties that are strictly local. The members of the city council are elected on proportional basis (corrected by means of d’Hondt system). The election of the mayor is not direct: after being elected, the members of the city council will elect the mayor in the first meeting of the local council after election. An absolute majority (50% + 1) of votes from the city council members is required to be elected as mayor in the first round. If no candidate obtains such a majority, then the top member of the list that obtained the largest fraction of votes in the local election is automatically elected as mayor.

<sup>†††</sup> Otherwise, the correlation between the variables *industrial\_interests* and *mayor* is low.

**Insert table 1 about here**

Table 2 shows the descriptive statistics for solid waste collection and water distribution concerning the form of production (private production, public production and mixed firm production)<sup>###</sup> and the level at which the service is produced (local or supralocal). It can be seen that private production is more common for solid waste collection than for water distribution.

**Insert table 2 about here**

Although production at the supramunicipal level is more common for solid waste collection, around 25 percent of municipalities use intermunicipal cooperation in the delivery of water distribution. In addition, municipalities that cooperate are less likely to use private production in water or solid waste services than are those that do not cooperate.

To this point, it is worth noting that the mean population size of municipalities that cooperate is much lower for solid waste collection than for water distribution. This can be explained by the different cost structures of these services. Fixed assets are required for producing both services but water distribution has network features that are associated to a high amount of sunk investments. In this regard, scale economies affect solid waste collection, while density economies are critical for water distribution. Scale economies implies that unit costs are reduced when the amount of output produced increases. Such effect may be approximated by the amount of inhabitants from municipalities to which the producer delivers the service. On the contrary, density economies implies that unit costs are reduced when population density concerning the municipalities to which the producer delivers the service is higher.

Hence, we expect inter-municipal cooperation for water distribution to take place more frequently between nearby municipalities located in major urban areas. Interestingly enough, our data show that Levin and Tadelis's (2007) finding that large municipalities (in terms of population) are more prone to contract out whereas small municipalities are more prone to use intermunicipal cooperation is heavily dependent on the nature of the potential scale economies involved in the specific service. In this way, our data for solid waste are consistent with Levin and Tadelis (2007), but our data on water distribution are not. In the latter case, economies of density are more relevant than scale economies. Economies of density emerge in metropolitan areas with more populated contiguous municipalities, rather than in non-metropolitan areas where population is much lower on average and municipalities cannot share an existing network for urban water distribution.

Table 3 presents the descriptive statistics of both continuous and discrete variables used to estimate our model. Concerning the continuous variables, our sample contains a large diversity

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<sup>###</sup> We exclude from the estimation those observations in which a mixed firm is in charge of delivering the service. Observations excluded are 76, which represents 7% of the sample. Mixed firms are firms whose stakeholders are both the corresponding governments and private investors. Such mixed public/private firms are usual in many European continental countries, but they are a very rare organizational form in countries like the US (Warner and Bel, 2008). Whenever a mixed firm is involved, we are not able to make clear standard inferences about the ownership status of the producer. In this way, we do not know with precision the structure of the firm ownership. Including mixed firms in the estimation would distort the analysis of the choice between public and private form of production since mixed firms are a hybrid organizational form.

of municipalities in terms of population size, fiscal burden, the strength of industrial interests, mayor's party affiliation,<sup>ssss</sup> and ideology. Furthermore, data from table 3 show that a high number of municipalities have privatized the production of the local service. In addition to this, around one third of the municipalities use intermunicipal cooperation, which can be seen as an organizational administrative form that allows exploiting scale economies or scope economies.

### Insert table 3 about here

Interestingly, the political affiliation of the mayor differs from the ideological orientation of the constituency in national elections in more than 25 percent of the municipalities of the sample. In our view, there are several and compatible reasons why there can be a conservative (progressive) mayor in a progressive (conservative) jurisdiction. Strong personal characteristics can play a role, as well as the fact that local policy agendas are different from national policy agendas. Besides, proportional system with lists and non-direct election of mayor can result in a more complex city council, and different types of coalition forming to elect a mayor. All this factors are likely to be more influential in those jurisdictions where does not exist a large ideological majority. This can be seen in table 4, where basic information on the mayor/ideology distribution in the sample is displayed. First, average population in municipalities where mayor's affiliation and ideological majority (CP and PC) are not the same is smaller than average population in municipalities where mayor's party and ideology are coincident (CC and PP). More importantly, average ideological results in CP and PC municipalities are notably more moderate than those in CC and PP municipalities, where the respective ideological majority is more significant.

### Insert table 4 about here

## The Empirical Results

The estimation is made using the probit technique since the dependent variable is of a discrete nature. Table 5 shows the results of the estimation for the different specifications of equation (1).

### Insert table 5 about here

Results of the estimates show that the size of the municipality in terms of population does not have a strong effect on the probability of using private firms for producing the service. The fact is that we find that the variables related to population have the expected sign: privatization increases with population (+ sign for  $pop$ ), but the intensity of that effect decreases as long as population increases (– sign for  $pop^2$ ). However, the coefficients we find are not significantly different from zero. One exception to this is that the variable for the square of population is statistically significant at the 10 per cent level in the specification that uses dummy variables that combine political and ideological factors. This implies that the largest municipalities tend to privatize less often because they are large enough to completely exploit scale economies.

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<sup>ssss</sup> After pooling the data for the two considered local services, the number of observations excluded from our sample in the estimations with the variable 'mayor' has been 95. We had initially 111 observations belonging to municipalities with 'independent mayor'. However, 16 of them had already been excluded because of mixed firms or not availability of fiscal data.

However, it is clear that privatization is not the unique choice available to local governments for exploiting scale or density economies. On the contrary, privatization is less likely when the production of the local service is made at the supramunicipal level.<sup>\*\*\*\*</sup> Hence, we can infer that many local governments prefer to use intermunicipal cooperation rather than privatization to exploit scale economies. Indeed, intermunicipal cooperation also allows small municipalities to aggregate demand to achieve a scale of production higher than the minimum efficient one. In such a case, those small municipalities obtain less benefit from privatizing the service, since transaction costs are likely higher for contracting out to a private firm than for joining a joint powers authority.

We also find that privatization is less likely for water distribution than for solid waste collection, given the value of the other explanatory variables related to the characteristics of municipalities. A sensible explanation for this result is that transaction costs are higher for water distribution, so local governments may have fewer incentives for using private firms in order to produce this service. Thus, we find evidence in favor of the hypothesis that privatization will be less likely in the case of services with larger transaction costs.

A local government's service delivery choices are not clearly influenced by its financial situation. The sign of the coefficient of this variable is positive, thus suggesting the expected positive relation between financial restrictions and privatization. However, the coefficient is not significantly different from zero. As we mention above, this 'no significant effect' result is much more frequent in empirical analysis for European countries, where supramunicipal regulations imposing restrictions on local budgetary decisions are less restrictive.

We do not find a substantial effect from the relative strength of local industrial groups on the privatization decision of local governments. The sign of the coefficient is the expected positive one but it is highly non-significant. It may be that industrial lobbying is more an action of those private players in the market for local services than a product of local industrial groups. Our variable reflects only local industrial groups, and this could explain its lack of statistical significance. In addition, it is worth mentioning that the results in Miralles (2008) are relative to water distribution, whereas our results relate to solid waste collection.

On the contrary, the variables that capture political and ideological factors play a significant role in explaining the decision to privatize local services.<sup>††††</sup> Indeed, we find that local governments where the mayor belongs to a conservative party privatize the production of local services more

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<sup>\*\*\*\*</sup> One could argue that the variable for intermunicipal cooperation implies an endogeneity bias as the decision to cooperate could be made simultaneously with the decision of contracting out the service. However, as we mention above, intermunicipal cooperation as it is understood in Europe is a decision that can be undertaken under any production form setting. Thus, the possible endogeneity bias is not an issue in our context.

<sup>††††</sup> In the empirical analysis, we exclude observations in municipalities that first externalized the delivery of the local services considered before local democracy was restored in Spain in 1979. Observations excluded are 78, which represents 7.2% of the sample. Inclusion of service delivery choices made in the authoritarian political context of Franco's dictatorship might distort the analysis of explanatory factors, particularly concerning the political factors, since these decisions were not taken within a democratic decision context. Many of these concessions, particularly on water distribution, were still in place in the early 2000's. Considering in the estimation municipalities that first externalized the service before democracy was restored yields similar results to those obtained in our analysis. Political variables show less robust results, even if they keep significance.

often (specification 1 of equation (1)). In addition, local governments with conservative constituencies also seem to privatize service delivery more commonly (specification 2 of equation (1)). However, the dummy variables that combine both political and ideological factors allow us to obtain further insights into this issue (specification 3 of equation (1)). Indeed, local governments with conservative mayors privatize more often regardless of the ideological orientation of the constituency.<sup>###</sup> This shows that political interests that influence the result of local elections are more important than the basic ideological stance of the constituency.

Tables 6, 7 and 8 display the results from estimating equation (1) for sub-samples of municipalities according to different population ranges. In this way, we consider small municipalities to be those with less than 20,000 inhabitants, medium-sized municipalities are municipalities whose population ranges from 20,000 to 50,000 inhabitants and large municipalities are those with more than 50,000 inhabitants.

### **Insert Table 6**

### **Insert Table 7**

### **Insert Table 8**

For all sub-samples of municipalities, we find that privatization is chosen less commonly when the local service is delivered at the supramunicipal level. Additionally, privatization takes place less often for water distribution than for solid waste collection. The results confirm those previously obtained for the whole sample of municipalities. Intermunicipal cooperation emerges as an alternative organizational form to privatization regardless the size of the municipality. In the same way, the fact that transaction costs associated to water distribution are higher is relevant for both small and large municipalities.

Concerning small municipalities, we find that the relationship between privatization and population has the expected inverse U-shaped form. Indeed, the variables for population and the square of population are statistically significant with the expected sign. Fiscal restrictions also seem to condition delivery choices of these municipalities given that the variable for fiscal stress is statistically significant (with a positive sign) in two of the specifications of equation (1). On the contrary, political and ideological factors are not statistically significant in any of the specifications of our equation for explanatory factors of local privatization. This latter result is also obtained when considering medium-sized municipalities. The relationship between population and privatization do not seem to be a relevant factor for medium-sized and large municipalities. This is also the case with respect to the influence of fiscal burden on local governments' delivery choices. Importantly, politics and ideology are both relevant factors explaining local privatization for large municipalities.

Overall, these results suggest that delivery choices of local governments are more pragmatically oriented for small municipalities, while politics and ideology play a major role for governments of large municipalities. Indeed, small municipalities may have difficulties in generating fiscal

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<sup>###</sup> We exclude from the estimation the following dummy variable that combines political and ideological factors: *P-P*: Progressive major – Progressive constituency. We exclude this variable from the estimation to avoid perfect multicollineality with the other dummy variables for political and ideological factors. This variable is set as the reference variable for these other dummy variables.

revenues and the quantitative advantages of privatization should be modest. In addition to this, it is sensible to argue that the politics of large cities is more dependent on ideological orientation, while personal interaction between politicians and citizens is a key issue in small towns.

Results from the estimation for sub-samples of municipalities according to different population ranges suggest significant differences for small and large municipalities. This may imply that different equations are needed to examine local governments' service delivery choices. In this way, we have implemented the Chow F-test for structural change considering the residuals of the estimation for the whole sample of municipalities, and the residuals of the estimation for municipalities with more (and less) of 20,000 inhabitants. The Chow test is a test of whether the coefficients in two equations on different data are equal. Within our context, under the null hypothesis there does not exist significant differences in the coefficients of the equations for municipalities with more (and less) of 20,000 inhabitants. However, the value obtained is about 100 that is highly above the 1 per cent critical values of the corresponding F-statistic. Thus, empirical analyses on factors explaining local privatization must account for the size distribution concerning the sample of municipalities used.

## Conclusion

This paper has developed an empirical model aimed to identify factors explaining local governments' service delivery choices in Spain. In this way, we have taken advantage of a rich data set using a survey for Spanish municipalities larger than 2,000 inhabitants concerning two very relevant local services; solid waste collection and water distribution.

The empirical model has considered variables related to fiscal stress, cost reduction and political and ideological factors. We contribute to the previous literature in several ways. There is an agreement that transaction costs are relevant in explaining local government's service delivery choices. However, few empirical works have been able to capture their effect. In our paper, we capture the effect of transaction costs using a new variable that differentiates between services associated with different levels of transaction costs.

In addition to this, ours is the first empirical analysis that jointly considers the influence of politics and ideology on local government choices by using measures that account for the political affiliation of the mayor, the ideological standpoint of the constituency and the joint effect of both. We argue that ideology is mainly captured by the constituency stance in national election, while the political affiliation of the mayor may well depend on the relative strength of interest groups.

Finally, this is the first empirical analysis considering intermunicipal cooperation as an explanatory factor for local privatization. Indeed, local governments may use intermunicipal cooperation as an alternative organizational form to privatization for reducing costs by exploiting scale or density economies.

Our main empirical findings are as follows. We find that private production is less common for water distribution than for solid waste collection, given the value of variables for the characteristics of the municipalities. From this result, we infer that transaction costs matters in explaining why local governments adopt or reject contracting out of local service, since transaction costs are higher in the case of water distribution.

We also obtain evidence that politics and ideology are relevant explanatory factors for local governments' service delivery choices. We also find that the effect of political interest is more important than the effect of ideological attitudes. Conservative mayors use private production more often regardless of the ideological position of their constituencies.

Furthermore, our results show that intermunicipal cooperation is an alternative to privatization for exploiting scale or density economies. Private production is much less frequent under intermunicipal cooperation, and intermunicipal cooperation negatively influences privatization.

Our research provides new insights into the factors influencing the decision to privatize local services. It also suggests interesting questions for future research. We find it particularly compelling to consider variables related to quality of services, although measurement of this variable for empirical work has proven to be a very difficult task. In addition, studying the dynamics of mixed firms can provide a deeper understanding of the dynamics of local government reform. Future research will devote more attention to these issues.

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## TABLES

Table 1. Summary of variables and hypothesis

Set of variables	Variable	Description	Hypothesis
Cost and efficiency	$pop$	Local population	Privatization increases with population (+)
	$pop^2$	Square of local population	The intensity of the population effect decreases as population increases (-)
	$transaction\_costs$	Dummy variable ( 1= water distribution, 0 = solid waste collection)	Privatization decreases with higher transaction costs (-)
Fiscal stress	$fiscal\_burden$	Sum of financial expenditures over sum of ordinary revenues of the local government	Privatization increases with higher fiscal burden (+)
Intermunicipal cooperation	$Coop$	Dummy variable (1 = service produced at the supra-municipal level, 0 at the municipal level)	Privatization decreases with intermunicipal cooperation (-)
Political and ideological factors	$industrial\_interests$	Relative share of industrial activity in the city/town.	Privatization increases with higher relative strength of industrial interests (+)
	$mayor$	Dummy variable ( 1 = mayor belongs to a conservative party, 0 = mayor belongs to a progressive party)	Privatization increases with mayors from a conservative party (+)
	$ideology$	Percentage of votes obtained by righth wing parties in the national elections	Privatization increases with a conservative orientation of the constituency (+)
	$CC$	Conservative mayor – Conservative constituency	CC > CP > PC > PP
	$CP$	Conservative mayor – Progressive constituency	CC > CP > PC > PP
	$PC$	Progressive mayor – Conservative constituency	CC > CP > PC > PP
	$PP$	Progressive mayor – Progressive constituency	CC > CP > PC > PP

Table 2. Selected descriptive statistics for individual services

Solid waste collection			
	Percentage of municipalities	Mean population	Standard deviation population
Private production	65.68	57,999.48	192,176.8
Public production	29.68	45,459.94	82,003.72
Mixed firm production	4.64	57,985.60	125,847.4
Cooperation at supramunicipal level	29.31	20,128.18	28,957.32
<u>Production form (only municipalities that cooperate)</u>			
Private production	51.27	23,330.89	37,044.54
Public production	38.61	17,219.11	16,622.05
Mixed firm production	10.13	15,003.69	15,315.46
Water Distribution			
	Percentage of municipalities	Mean population	Standard deviation population
Private production	49.82	46,371.95	110,140.9
Public production	40.84	64,809.56	223,654.4
Mixed firm production	9.34	81,020.10	132,981.1
Cooperation at supramunicipal level	24.36	79,273.14	300,217.3
<u>Production form (only municipalities that cooperate)</u>			
Private production	30.08	81,571.85	249,493.04
Public production	61.65	86,443.52	341,043.94
Mixed firm production	8.27	17,465.27	17,324.17

Source: Authors'

**Table 3. Descriptive statistics of variables in the model**

<b>Continuous variables</b>	<b>Mean</b>	<b>Standard Deviat.</b>	<b>Min</b>	<b>Max</b>
Pop	54,088.54	166,644.1	2,033	3,092,759
Fiscal_burden	0.087	0.068	0.00002	0.823
Industrial_interests	0.0025	0.0028	0.0002	0.030
Ideology	0.488	0.107	0.18	0.80
<b>Discrete variables</b>	<b>Percent 1</b>	<b>Percent 0</b>	<b>N</b>	
Production form (1= private, 0= public,)	62.08	37.92	1,010	
coop. (1=production at the supramunicipal level, 0=production at the municipal level)	26.82	73.18	1,085	
transaction_costs (1=water distribution, 0=solid waste collection)	50.32	49.68	1,085	
Mayor (1= Conservative mayor, 0= Progressive mayor)	44.34	55.66	972	
CC (1= Conservative mayor – Conservative constituency, 0=other)	33.13	66.87	972	
CP (1= Conservative mayor – Progressive constituency, 0=other)	11.21	88.79	972	
PC (1= Progressive mayor – Conservative constituency, 0=other)	13.99	86.01	972	
PP (1= Progressive mayor – Progressive constituency, 0=other)	41.67	58.33	972	

Source: Authors'

**Table 4. Distribution of municipalities according to the mayor affiliation/ideological majority combination**

	Conservative Mayor - Conservative Constituency CC	Progressive mayor – Conservative constituency PC	T-statistic (Average differences)	Conservative mayor – Progressive constituency CP	Progressive mayor – Progressive constituency PP	T-statistic (Average differences)
Number municipalities	169	71		56	206	
Average population (Standard deviation)	67,716 (251,821)	39,353 (51,342)	1.397	53,184 (111,596)	53,973 (129,181)	0.045
Average ideological majority (Standard deviation)	0.58142 (0.0686)	0.54866 (0.0502)	4.116***	0.45889 (0.0427)	0.39495 (0.0765)	8.211***

Note 1: percentages in 'average ideological majority' are to be read as follows: 0.58142 in CC means that the conservative parties obtained 58.142% of votes in the CC municipalities (as average) in the national elections of 2000 and 2004.

Note 2: Significance at the 1% (\*\*\*), 5% (\*\*), 10% (\*)

Source: Authors'

**Table 5. Estimates of the equation of factors explaining local privatization estimates (probit)**

	<b>Specification (1): mayor</b>	<b>Specification (2): ideology</b>	<b>Specification (3): combined mayor-ideology</b>
Pop	1.91e-06 (2.23e-06)	8.93e-07 (2.12e-06)	1.83e-06 (2.22e-06)
pop <sup>2</sup>	-1.59e-11 (8.59e-12)	-1.28e-11 (8.22e-12)	-1.55e-11 (8.55e-12)*
Coop	-0.77 (0.10)***	-0.70 (0.09)***	-0.76 (0.10)***
Transaction_costs	-0.41 (0.09)***	-0.41 (0.09)***	-0.42 (0.09)***
fiscal_burden	0.89 (0.67)	0.78 (0.66)	0.90 (0.67)
Industrial_interests	10.86 (17.20)	17.46 (15.63)	9.68 (17.49)
Intercept	0.47 (0.12)***	0.10 (0.23)	0.46 (0.13)***
Mayor	0.20 (0.09)**	-	-
Ideology	-	0.99 (0.41)**	-
CC	-	-	0.18 (0.11)*
CP	-	-	0.28 (0.16)*
PC	-	-	0.03 (0.13)
N	818	913	818
Pseudo R <sup>2</sup>	0.08	0.08	0.08
$\chi^2$ (joint sig.)	82.11***	85.96***	82.49***
Log pseudolikelihood	-505.69	-565.008	-505.47

Note 1: Standard errors in parentheses (robust to heteroskedasticity)

Note 2: Significance at the 1% (\*\*\*), 5% (\*\*), 10% (\*)

**Table 6. Estimates of the equation of factors explaining local privatization estimates (probit).  
(Municipalities with less than 20,000 habitants)**

	<b>Specification (1): mayor</b>	<b>Specification (2): ideology</b>	<b>Specification (3): combined mayor-ideology</b>
Pop	0.00011 (5.5e-05)**	0.00015 (5.51e-05)***	0.00011 (5.5e-05)**
pop <sup>2</sup>	-4.07e-09 (2.65e-09)	-6.26e-09 (2.46e-09)**	-4.00e-09 (2.67e-09)
Coop	-0.68 (0.15)***	-0.56 (0.14)***	-0.68 (0.15)***
transaction_costs	-0.41 (0.13)***	-0.41 (0.12)***	-0.41 (0.13)***
fiscal_burden	1.77 (1.03)*	1.47 (1.01)	1.83 (1.05)*
Industrial_interests	4.29 (21.15)	13.74 (18.83)	2.61 (21.65)
Intercept	-0.20 (0.28)	-0.54 (0.38)	-0.19 (0.31)***
Mayor	0.10 (0.13)	-	-
Ideology	-	0.64 (0.54)	-
CC	-	-	0.07 (0.15)
CP	-	-	0.21 (0.22)
PC	-	-	0.04 (0.20)
N	407	469	407
Pseudo R <sup>2</sup>	0.07	0.07	0.07
$\chi^2$ (joint sig.)	36.81***	38.42***	36.96***
Log pseudolikelihood	-255.79	-294.227	-255.56

Note 1: Standard errors in parentheses (robust to heteroskedasticity)

Note 2: Significance at the 1% (\*\*\*), 5% (\*\*), 10% (\*)

**Table 7. Estimates of the equation of factors explaining local privatization estimates (probit).  
(Municipalities whose population ranges from 20,000 to 50,000 inhabitants)**

	Specification (1): mayor	Specification (2): ideology	Specification (3): combined mayor-ideology
Pop	5.35e-05 (9.66e-05)	0.00012 (9.12e-05)	7.26e-05 (9.75e-05)
pop <sup>2</sup>	-1.27e-09 (1.44e-09)	-2.19e-09 (1.36e-09)	-1.57e-09 (1.45e-09)
Coop	-0.75 (0.20)***	-0.74 (0.19)***	-0.75 (0.20)***
Transaction_costs	-0.42 (0.18)**	-0.35 (0.17)**	-0.41 (0.17)**
fiscal_burden	-0.20 (1.33)	-0.15 (1.33)	-0.22 (1.35)
Industrial_interests	54.49 (39.28)	56.78 (35.15)	62.08 (36.63)*
Intercept	0.22 (1.58)***	-1.47 (1.56)	-0.01 (1.60)
Mayor	0.20 (0.18)	-	-
Ideology	-	1.13 (0.77)	-
CC	-	-	0.22 (0.22)
CP	-	-	-0.16 (0.32)
PC	-	-	-0.29 (0.24)
N	230	252	230
Pseudo R <sup>2</sup>	0.11	0.10	0.12
$\chi^2$ (joint sig.)	28.96***	28.86***	31.57***
Log pseudolikelihood	-133.60	-147.47	-255.56

Note 1: Standard errors in parentheses (robust to heteroskedasticity)

Note 2: Significance at the 1% (\*\*\*), 5% (\*\*), 10% (\*)

**Table 8. Estimates of the equation of factors explaining local privatization estimates (probit).  
(Municipalities with more than 50,000 inhabitants)**

	Specification (1): mayor	Specification (2): ideology	Specification (3): combined mayor-ideology
Pop	-1.37e-06 (4.09e-06)	-1.23e-06 (4.39e-06)	-2.01e-06 (3.37e-06)
pop <sup>2</sup>	-7.36e-12 (1.03e-11)	-7.29e-12 (1.16e-11)	-5.51e-12 (7.32e-12)
Coop	-1.02 (0.26)***	-1.10 (0.27)***	-1.05 (0.26)***
Transaction_costs	-0.42 (0.20)**	-0.44 (0.20)**	-0.44 (0.21)**
fiscal_burden	0.07 (1.23)	-0.10 (1.20)	0.02 (1.24)
Industrial_interests	18.96 (83.23)	37.97 (82.78)	21.46 (82.44)
Intercept	0.73 (0.37)**	-0.68 (0.61)	0.64 (0.35)*
Mayor	0.38 (0.21)*	-	-
Ideology	-	3.12 (1.07)***	-
CC	-	-	0.47 (0.24)**
CP	-	-	0.76 (0.37)**
PC	-	-	0.59 (0.32)*
N	181	192	181
Pseudo R <sup>2</sup>	0.17	0.18	0.18
$\chi^2$ (joint sig.)	30.66***	32.52***	33.03***
Log pseudolikelihood	-102.63	-107.16	-100.57

Note 1: Standard errors in parentheses (robust to heteroskedasticity)

Note 2: Significance at the 1% (\*\*\*), 5% (\*\*), 10% (\*)