

Choosing hybrid organizations for local services delivery: An empirical analysis of partial privatization

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Abstract: The empirical literature about factors explaining local government delivery choices has traditionally focused the attention on the public or private production dilemma. However, hybrid organizational forms such as mixed public-private firms are increasingly used in several European countries. This paper makes use of survey data from Spanish municipalities to examine motivations of local governments for engaging in hybrid organizational forms. Data refer to two very relevant local services: water distribution and solid waste collection. The empirical analysis indicates that the use of mixed firms emerge as a type of pragmatically based 'third way' between pure public and pure private production. Indeed, local governments make use of mixed firms when cost considerations (scale economies, transaction costs and so on), financial constraints and private interests exert contradictory pressures. On the contrary, political and ideological factors do not play any significant role on the local government decision of engaging or not in joint ventures with private partners.

Key words: Partial privatization, local governments

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1. Introduction

A large amount of research, theoretical as well as empirical, has been devoted to analyze why local governments choose to privatize public services or, instead, they retain public delivery [Bel and Fageda (2007) offer a recent and wide review of this literature]. Standard analysis has usually developed within a framework of public production versus privatization/contracting out choice. However, Warner and Hebdon (2001) emphasizes that privatization is not the unique available option in the menu for the reform of local services, and Hefetz and Warner (2007) argue that analysis must move beyond the either/or dichotomy of public versus private production and must pay more attention to the fact that local government contracting is a complex management process which combines transactions costs, managerial concerns, and democratic management issues.

There is an increasing interest in analyzing reforms of delivery choices other than strict privatization and contracting out. In this way, Warner and Hefetz (2008) show significant growth in mixed delivery modes in the US since 1997. Mixed delivery in the US implies that a municipality is divided in several service districts, and pure public delivery is used in one or more districts whereas pure private production is used in the other district(s) within the same municipality.² Another interesting work outside the ‘public or private decision’ is that by Tavares and Camões (2007). These authors study the reasons why Portuguese municipalities decide to reform bureaucratic delivery by creating municipal corporations, which are single function entities that have independent corporate status. Hence, even if delivery keeps being of pure public character with this reform, municipal corporations enjoy more discretion in employment and financial operations and have the right to own property. Because of this, they enjoy more flexibility in order to organize the delivery of the service.

In this paper we take a different approach and, instead of focusing on pure delivery forms (be it public or private), we analyze the motivations that influence partial privatization of local services by means of using mixed public-private firms for delivery. Mixed public-private firms are hybrid

² Warner and Bel (2008) provide a detailed analysis of the organization of service delivery in the US.

organizational forms that escape the pure public/pure private dichotomy. In these firms ownership is divided between the government and the private sector, and they fully operate under private commercial law.

Under partial privatization, municipal or supra-municipal governments engage in long term contracts with private firms through joint ventures. The government retains some degree of control in the firm, and day to day operations are usually conducted by the industrial private partner. This allows less costly monitoring, thus reducing transaction costs. Based on theoretical literature on partial privatization and on the relationship between partial private ownership and managers' choices (e.g. Matsumura 1998; Matsumura and Kanda 2005), managers of mixed firms under effective control of local government are expected to give more weight to the objectives of local government and give less weight to profit maximization. In a similar fashion, Schmitz (2000) shows that partial privatization may imply an optimal combination of incentives for reducing costs and improving quality in comparison to pure production forms (either public or private).

Mixed public-private firms have achieved a relevant role in the delivery of local services not only in Spain (Bel 2006, Warner and Bel 2008), but also in other European countries. Bognetti and Robotti (2007) explain the legal status of mixed firms in Italy³, discuss the pros and cons of mixed firms regarding efficiency and performance, and find that 14% of local public utilities in Italy are mixed public-private firms.⁴

However, empirical literature on partial privatization of local services is extremely scarce. With this paper we intend to contribute to the literature by providing an empirical multivariate analysis of the factors that explain partial privatization: that is, the decision to choose mixed public-private firm to deliver the service, instead of choosing pure production forms -either public or private-. From our analysis we find that partial privatization appears to be more frequent when those factors leading to privatization (such as cost structure considerations, financial restrictions or private interests, among

³ Bognetti and Robotti (2003) analyze the implications of the 2002 Financial Law in terms of the promotion of market mechanisms in local services delivery in Italy, including the use of different types of public-private mixed firms.

⁴ In addition to this, Bognetti and Robotti (2007) pay attention too to public-public mixed enterprises in the sense that there are several owners and all of them are public entities. The mixed enterprises represent 13% of public utilities in Italy. This type of multigovernment firm is not common in Spain, and does not represent partial privatization. Hence, it is outside our main object of study. Multigovernment firms exist too in other countries, such as The Netherlands (Dijkgraaf and Gradus, 2008a, 2008b), or Norway (Sørensen, 2007); in these works they are usually considered as a type of public firms.

others) exert contradictory pressures. In this way, partial privatization seem to emerge as a type of pragmatically based ‘third way’ between pure public and pure private production choices. In addition to this, mixed public-private firms are positively related to intermunicipal cooperation, which suggests that taking advantage of scale economies can be another factor leading to partial privatization.

The rest of the paper is organized as follows. In section 2 we review the theoretical background on the explanation of local governments’ choices concerning production form of local services, since this is the framework useful to analyze partial privatization. In section 3 we characterize the organization of the markets for solid waste and water distribution in Spain, since these provide the fields within which we conduct our empirical analysis. In section 4 we explain our empirical strategy, and in section 5 we discuss the results obtained from our estimations. Finally, we draw the main conclusions from our analysis.

2. Factors explaining local governments’ delivery choices: Theoretical background

Several theoretical approaches have been developed in relation to the choice of production form of local services. Public Choice was the first to comprehensively analyze delivery choices within the domain of public services, and according to this theory, overproduction and inefficiency will be the outcome when politicians and bureaucrats monopolize public services delivery (Niskanen, 1971). Two basic hypotheses that emerge from this approach are that contracting out by local governments improves technical efficiency in the production of the service, and provides lower costs in the service delivery.

Costs considerations in the delivery choices of governments have been too the central issue in another group of theories related to privatization, which focuses on transaction costs. When deciding whether to make or buy a service, administrative costs and costs from incomplete contracts are important (Williamson 1979, 1999), and a core role is played by factors such as monitoring and control (Sappington and Stiglitz, 1987). Following these theoretical approach a core hypothesis emerges: whenever transaction costs involved are huge, privatization will not likely deliver cost savings and improved performance. Hence, conditions like asset specificity or difficulty of performance monitoring are central in determining when a local service can be successfully privatized (Brown and Potoski, 2003), since they influence the level of transaction costs.

Property rights theory⁵ provides another important approach. The theory of incomplete contracts (Grossman & Hart, 1986; Hart & Moore, 1990) offers a useful analytical framework in situations where contracting is a complex operation. Hart, Shleifer & Vishny (1997) show that -with private production- the manager has incentives to reduce costs, but he/she has no concern for quality erosion. Hence, a trade-off between costs savings and service quality is likely to emerge. Privatization will likely reduce costs but it can also result in lower quality of service. In this theoretical setting, Schmitz (2000) shows that partial privatization may imply better incentives to reduce costs in comparison to pure public production while it may also imply better incentives to improve quality in comparison to pure private production.

Based on these theoretical approaches, several hypotheses have been raised in the literature concerning the factors that influence local privatization. These hypotheses can be grouped into two economic and two political families (Bel and Fageda 2007). On the economic side, governments may be inspired by some combination of fiscal restrictions and anticipated lowered costs. Concerning fiscal motivations, two main restrictions on local finance have been working simultaneously since the 1980s. On one hand, local political environments have reduced the ability to raise revenues; on the other, supra-local restrictions have limited transfers from other governments. Because of this, most studies of privatization include fiscal variables designed to measure the effects of such restrictions, the usual hypothesis being a positive relation between fiscal constraints and privatization.

Still on the economic side, and now regarding cost considerations, emphasis has been put on the fact that contracting out works by introducing competition where there is a public monopoly (Savas, 1987), and by breaking the monopoly of public services contracting out should provide lower costs. A different approach emphasizes that costs saving from privatization can be achieved by exploiting economies of scale when the public service has been delivered over a suboptimal jurisdiction (Donahue, 1989).

On the political side, policy makers can be moved by the desire to win the support of key interest groups, or by loyalty to an ideology. Within a democratic environment, two main motivations guide politicians in their decisions. On one side, politicians seek to win elections and control government. On the other side, according to their ideological attitudes politicians have preferences for some policies over others. This dual

⁵ Based on seminal works by Alchian (1967) and Alchian and Demsetz (1972).

dimension of politicians within a democratic environment has been named the *citizen-candidate* approach, following theoretical works by Osborne and Slivinski (1996), and Besley and Coate (1997). Within the domain of political interests, the decision to privatize is dependent on the existence of pressure groups (such as industrial interests or trade unions) having a particular interest in the rents resulting from a given form of service delivery. Ideology may also influence privatization: progressive parties have been linked to more pro-public values (hence, more public production), whereas conservative parties are associated with more pro-private business orientation (hence, more privatization).

All in all, the hypothesis more commonly analyzed in the literature examining the motivations of privatization of local services can be summarized as follows (Bel and Fageda 2007): a) Fiscal constraints should be positively associated with privatization. b) Private production can be encouraged by the desire of reducing costs, either through competition or by exploiting scale economies. c) The relative strength of different interest groups, such as unions or industrial business, should influence local government privatization decisions. d) Progressive governments will be more reluctant to privatize local services, while Conservative governments will be more prone to privatization.

3. The organization of refuse collection and water distribution in Spain

Spanish municipalities have a legal obligation to provide services for solid waste collection and for water distribution, as established in the Law 781/1986 of Basis for the Local Regime. With regard to the effective delivery of these services, local governments are free to choose between different organizational forms available within the Spanish legal framework. In this way, there exists pure public and pure private production, as well as mixed forms or hybrid organizations (Warner and Bel, 2008).

Pure public production implies that a public bureaucracy (a governmental department) or a public agency (a public unit working under public administrative law) produces the service in-house. In both cases, the bureaucracy or the public agency operates under the rules of public administrative law. Still within the framework of 'public production', a more sophisticated organizational form in Spain is that of public firms [as well as in some other European Union countries, such as Italy (Bognetti and Robotti, 2007), Netherlands (Dijkgraaf and Gradus, 2007, 2008b), Norway (Sørensen, 2007), Portugal (Tavares and Camões 2007, or Sweeden (Ohlsson 2003)]. These are government owned firms that are managed and organized under

private commercial law rules. In this way, even if public firms are similar to public bureaucracy and public agencies in the sense that the government has ultimate control, with a public firm the managers enjoy much greater autonomy: they have much more flexibility with respect to inputs purchasing, work force organization, etc. Interestingly, public firms in Spain do not usually compete for contracts outside their own jurisdiction, contrarily to what happens in other European countries, such as The Netherlands (Dijkgraaf and Gradus, 2007) and Norway (OECD 2000).

On the other extreme along the public-private continuous there is the pure private production, which implies that a privately owned firm produces the service. A contract defines the relationship between the public administration and the private firm, and management and organization within the private firm are governed by rules of private commercial law.⁶ Because of this, private firms have much more flexibility than public bureaucracies concerning key issues in local services such as work force organization, managers' remuneration, etc.

Besides pure public production (including here public firm as a form of pure public, since it is under complete government control) and pure private production, a hybrid organizational form is relevant in Spain: mixed public-private firms (mixed firms henceforth). Mixed firms are firms where ownership is divided between the government and the private sector, and operate under private commercial law. Under partial privatization, municipal or supra-municipal governments engage in long term contracts with private firms through joint ventures (Bel 2006, Warner and Bel 2008). Spanish mixed firms do not compete for contracts outside their own jurisdictions, contrarily to what happens in Italy (Bognetti and Robotti, 2007).

In many cases the government retains a control stake in the firm, and the private partner tends to be a firm with a established position in the market for private delivery of local services. In such cases, however, day to day operations are usually conducted by the industrial private partner, whereas the government retains some degree of control over strategic decisions. In some cases, local governments hold a small fraction of shares in the mixed firm. Here the industrial private partner has more control over all decisions regarding the service, and the local government benefits from easier access to

⁶ Most contracts to external suppliers are awarded through competitive tendering; but not all of them, since competitive tendering is not compulsory in Spain. As a matter of fact, only private firms participate in bids for contracts, and –as mentioned- public firms and mixed firms do not usually bid for contracts outside their own jurisdiction. Because of this, contracting out is –in practice- equivalent to private production in water distribution and, especially, in solid waste collection.

information on the service and on the firm. This allows less costly monitoring, thus reducing transaction costs.

Data for the organization of the solid waste and water distribution services in Spain has been obtained by means of the *II Survey on Production of Local Services*, run by the research unit 'Public Policies and Economic Regulation' at Universitat de Barcelona. Detailed information on the survey methodology and the data gathered from it is available in Bel (2006).

With regard to solid waste collection, in 2003 56% of the municipalities with population over 2,000 had contracted out to private firms, which implies two-thirds of the Spanish population is being served by a private firm (see Table 1), since the average population of municipalities with private production is higher than that of the municipalities with public production. Public production (bureaucracy + public firm) exists in 37% of the municipalities, but only little more than one-fourth of population is served by public delivery. Finally, 7% of the municipalities (6% of the population) are served by mixed firms.

Insert table 1 around here

Concerning water distribution, 42% of the municipalities with population over 2,000 had contracted out solid waste collection to private firms in 2003, which implies 40% of the Spanish population is being served by a private firm, since the average population of municipalities with private production is close to the mean. Public production (bureaucracy + public firm) exists in more than 50% of the municipalities, but only 48% of population is served by public delivery. Finally, little more than 6% of the municipalities are served by mixed firms, but this represents 12% of population.⁷

All in all, mixed firms have a small, but by no means negligible, share of service delivery in solid waste and water distribution. In the case of solid waste, mixed firms are particularly relevant among smaller municipalities, and the percentage of served population is slightly smaller than the share as a percentage of municipalities (7%). The opposite happens with water distribution: while the percentage of municipalities served by mixed firms is

⁷ In our sample one municipality in solid waste collection (Parla) and 2 municipalities in water (Calvià and Marratxí) have public and private production coexisting within their jurisdiction. This represents 0.1% of municipalities and 0.2% of population served, for both services. Indeed, mixed public-private market delivery (in the U.S. sense, which means that public and private production coexists in the same jurisdiction) is only exceptional in Spain for solid waste and water distribution services. In fact, among European countries, Sweden is the only one in which it is relatively common to find this mixed market delivery (OECD 2000).

similar to that in solid waste collection, the percentage of population served is much larger (12%), since mixed firms (as well as public firms) in water distribution are particularly frequent in large municipalities (for instance, 16% of municipalities over 100,000 inhabitants are served by mixed firms).⁸

To sum up, many municipalities in Spain take the decision of partially privatize delivery of solid waste and water distribution. In this way, they engage in joint ventures with private partners in order to organize the delivery of solid waste and water distribution. In doing so, they accept incurring in higher coordination costs as compared to pure public organizations. On the contrary, and compared to pure private production, these municipalities retain more control and information even if they give an important role to private partners, thus reducing transaction costs. When comparing to pure public production, they relinquish some control on the organization of the service, but they can enjoy whatever benefit that private partners can provide (managerial know how, scale economies, up-dated technology, incentives and so on.). In the next section we analyze what factors lead governments in Spain to partially privatize local services, thus choosing a hybrid organization instead of a pure organizational form (either public or private).

4. The Empirical Strategy

The data used in the empirical analysis makes reference to municipalities larger than 2,000 inhabitants in Spain that filled out the survey mentioned above. It has been obtained information for 539 municipalities in solid waste collection and for 546 municipalities in water distribution.⁹ Note that the equation to estimate considers observations for both local services, so that each municipality of the sample may involve one or two observations. Information contained in the survey is for 2003 and includes the form of delivery (i.e. pure public production, pure private production, partially privatized)¹⁰, 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.

⁸ Note that the percentages given in table 1 are adjusted for differences in municipalities size regarding the frequency of response to the survey. Hence, the adjusted percentage of mixed firms is very similar for water distribution and solid waste although the absolute number of municipalities differ between both services. This is due to the fact that mixed firms are relatively more frequent in large municipalities for water distribution.

⁹ Recall that, initially, information on production form was obtained for 540 municipalities in solid waste and 548 in water distribution. However, Parla -in solid waste- and Calvià and Marratxí -in water distribution- have coexisting pure public and pure private production within their municipalities (that is to say, mixed delivery *a la US*). Hence, we have not been able to include these three observations in our empirical analysis.

¹⁰ Our sample does not provide detailed information on the percentage of shares retained by the government in the case of mixed firms.

Data for population of municipalities in 2003 has been obtained from the Spanish Statistics Institute, while details about the local fiscal burden come from the Ministry of Treasury.¹¹ The web site of the Spanish Ministry of Domestic Affairs provides information for electoral results at the city/town level. Finally, data concerning the strength of industrial interests is available in the 2004 Spanish Economic Yearbook published by La Caixa, a Spanish savings bank.

The empirical model has to do with the literature on factors explaining local government's delivery choices. According to the theoretical framework stated in section 2, our empirical model includes several variables that capture economic aspects; the demand of local services at the municipal level, fiscal stress industrial interests and transaction costs. Additionally, the model includes variables that account for political and ideological factors. The equation to estimate takes the following form:

$$Y_i = a + \beta_1 pop_i + \beta_2 pop_i^2 + \beta_3 coop_i + \beta_4 transaction_costs + \beta_5 fiscal_burden_i + \beta_6 industrial_interests_i + \beta_7 (political\ and\ ideological\ factors)_i + \varepsilon_i \quad (1)$$

where Y_i is a dummy variable that takes a value of 1 when a mixed firm produces the service and 0 when a pure organizational form (either public or private) is in charge of the delivery of the service

We include the following explanatory variables in equation (1). Variables for population and the square of population of municipalities are considered, pop and pop^2 . Population is usually used as a proxy for the demand of local services. We expect the relationship between the demand size and the decision to partially privatize to have an inverse-U shape (Bel & Miralles, 2003). Dealing with private partners, small towns bear high transaction costs while large cities do not take benefit from scale economies or better managerial capacities, since large cities already operate at the optimal scale and enjoy highly skilled managerial capabilities.

Furthermore, we include a dummy variable that account for the use of intermunicipal cooperation to deliver the service, $coop$. This variable takes value of 1 when the service is produced at the supramunicipal level, while it is 0 when production is municipal. Municipalities that cooperate may take several benefits from engaging in joint ventures with private partners (scale

¹¹ Data for this variable refer to 2002 since it is the fiscal burden a year prior to a decision that should influence local government choices.

economies, managerial capacities and so on) and, in turn, they may afford low transaction costs and a favorable position in the bargaining process.¹²

Recall that the decision of using mixed firms may imply higher transaction costs in comparison to pure public production but lower transaction costs in comparison to pure private production. Keeping this in mind, each service is associated with different amounts of transaction costs depending on the characteristics of the production process (asset specificity, ease of performance measurement). To this regard, we measure the role of transaction costs through a dummy variable for the considered service, *transaction_costs*. This variable takes a value of 1 when the service is water distribution and 0 for solid waste collection. The transaction costs of contracting out should be higher for water distribution than for solid waste since the former service has strong network features. Building indicators ranging from 1 (low specificity, or easy measurement) and 5 (high specificity, and difficult measurement), Brown and Potoski (2005) find asset specificity of 3.94 and ease of measurement 2.44 for water distribution. Otherwise, they find that asset specificity is 3.00 and ease of measurement 2.06 for residential solid waste and 3.06 and 1.97 for commercial waste. In the same fashion, Bel (2006) provides evidence that contract terms are longer in water than in solid waste.

Equation (1) also includes fiscal burden as a explanatory variable, *fiscal_burden*. 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).¹³ As we mentioned above, it is more likely some form of private production in delivering services when local governments face fiscal constraints. The use of private production may imply either contracting out to private firms or engaging in joint ventures with private partners

We also take into account the influence of industrial interests on privatization, *industrial_interests*. This variable reflects industrial activity by measuring the dimension of industrial activity in the city relative to the whole

¹² It is worthwhile noting that intermunicipal cooperation in Spain –as well as in other European countries- is compatible with any organizational form (Bel and Fageda, 2007). 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. In the Netherlands too, intermunicipal cooperation is not compatible with private production (Dijkgraaf and Gradus, 2007, 2008).

¹³ Data on fiscal burden are not available for nine municipalities so that 18 observations have been excluded from the sample. Data for other nine municipalities are available only for 2001.

country level. It is based on an index that measures the tax revenues share of the city over the whole country. Here tax revenues refer to local taxes for industrial activities. The expected sign of the coefficient for this variable is not clear. The higher the strength of industrial interests is the higher the pressures are for fully privatize the delivery of the service. Hence, the use of pure private (public) production is more (less) likely when the strength of industrial interests increases but it is ambiguous the effect on the use of mixed firms.

The effects of political and ideological influences are captured by using two distinct variables. 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.¹⁴ 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.

Note that the political affiliation of the mayor may differ from the ideology the constituency shows in national elections. In fact, a mayor's affiliation might also depend on the relative strength of interest groups (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 clearly not identical.

5. Results

Table 2 shows the results of the estimates of the two specifications of equation (1) for both considered services. The equation is significant at 1% level, and the pseudo- R^2 is in within the usual range in the empirical literature on local privatization. We find that all variables capturing economic factors are statistically significant while political and ideological factors do not play

¹⁴ 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

any significant role. Thus, we find clear evidence that the use of mixed firms by local governments is based on a very pragmatic approach.

Insert table 2 about here

Coefficients (sign as well as statistical significance) suggest that governments seem to be more prone to engage in hybrid organizational forms (such as mixed firms) when transaction costs of the service are high (+ sign, which should prevent privatization), when financial burden of the local government is high (+ sign, which should promote privatization), and when local industrial interests are weaker (- sign, which should prevent privatization). Hence, mixed firms appear to be more frequent when cost considerations, financial restrictions and private interests exert contradictory pressures.

Indeed, high transaction costs and weak industrial interests prevent the choice of pure private production. On the contrary, financial constraints prevent the choice of pure public production. Mixed firms seem to emerge as a type of pragmatically based ‘third way’ between pure public and pure private production.

The sign of the coefficients (and its statistical significance) of variables for population show the expected inverse-U shape relationship between municipalities size and the decision to partially privatize the service delivery. Hence, medium-sized municipalities seem to use more commonly mixed firms. Concerning these municipalities, the using of mixed firms allows them to obtain more benefits than the associated transaction costs of dealing with private partners.

Besides, mixed firms are positively related to intermunicipal cooperation. Engaging in a public-private partnership with an industrial partner requires bargaining power on the government side. Large cities engage with private partners in mixed firms by themselves. On the other hand, a joint powers authority set up for intermunicipal cooperation increases the bargaining power of small municipalities. Hence, mixed firms are more frequent among small municipalities engaged in cooperation than among small municipalities that do not cooperate. In this regard, the mean population of municipalities that use mixed firms is much lower when the service delivery is undertaken at the supramunicipal level, as table 3 shows.

Insert table 3 around here

Table 4 and 5 show the results of the estimates for water distribution and solid waste collection, respectively. Concerning water distribution, the using of mixed firms seems to be more likely when financial burden is high and also when industrial interests are weaker. Additionally, municipalities that cooperate use more often mixed firms to deliver the service. It is also found some evidence of the inverse-U shape relationship between municipalities size and partial privatization. Again ideological and political factors do not play a relevant role in the decision of using or not mixed firms. Results of the estimation for solid waste collection indicate that intermunicipal cooperation is strongly positively correlated with the using of mixed firms. In fact, this is the main factor that explains local government's choices of pure or hybrid organizational forms in solid waste. The influence of the rest of explanatory variables is not clear for this service.

Note that the cost structure of both local services is quite different. In water distribution, the network characteristic of the service infrastructure is associated with a large amount of sunk investments. This implies high transaction costs and gives relevance to density economies derived from population concentration. For water distribution, the complexity of the production process implies that all the variables capturing economic aspects will influence on the decision of using or not mixed firms. Indeed, the organizational form chosen by local governments in water distribution seem to follow a very pragmatic pattern but several factors condition such pattern

On the contrary, transaction costs and density economies do not play a relevant role in the delivery of solid waste collection, which has a simpler production process. However, some fixed costs are required to deliver this service so that scale economies derived from the amount of output produced are present. Hence, very small towns may cooperate with other municipalities in the delivery of solid waste to take advantage of such scale economies. With cooperation, those small towns may benefit from a stronger bargaining power when dealing with private partners as well. From our results, the pragmatic approach that local governments also follow in the organizational form choices for solid waste is mainly influenced by the previous decision of cooperate or not with other municipalities. Neither the relative strength of industrial interests nor fiscal burden of municipalities seems to be very influential.

Insert table 4 about here

Insert table 5 about here

The increasing relevance of mixed firms in Spain –as well as other European countries- could help explain why public services delivery reform is more stable in Europe than in the US (Warner and Bel, 2008), where oscillation between public delivery and private delivery is much more frequent (Hefetz and Warner, 2004, 2007). It may well happen that mixed firms increase the flexibility of organizational forms available for local governments seeking to implement a reform. On the one hand, governments that want to escape from pure public production but do not want (or cannot) go to pure private production can use mixed firms. On the other, local governments that have experienced a private contract failure might use mixed firms if they do not want to go back to pure public production.

6. Concluding remarks

The using of mixed public-private firms has a relevant and increasing role in several European countries. However, empirical literature about factors explaining local government delivery choices has focused the attention on the public or private production dilemma. In analyzing such dilemma, different theories provide empirical tests to account for cost considerations, fiscal constraints and political and ideological factors.

This paper adds to previous empirical literature by examining attributes of municipalities that influence the decision of local governments to engage in hybrid organizational forms (such as mixed firms) rather than using pure production forms (either public or private). Additionally, it takes into account the role that intermunicipal cooperation and transaction costs may have on that decision.

The data used comes from a survey for municipalities concerning two relevant local services; solid waste and water distribution. From this survey, we know that both services are delivered by mixed firms in a significant proportion of municipalities. In Spain, the using of mixed firms can be considered a partial privatization where municipal or supra-municipal governments engage in long term contracts with private firms through joint ventures. Under this hybrid organizational form, local governments take advantage of private partners from the exploitation of scale economies, the using of better managerial capacities, incentives and so on. And, in turn, they may afford lower transaction costs than in the case they contract out to a private firm.

Results from the empirical analysis show that the use of mixed firms by local governments is based on a very pragmatic approach. Indeed, mixed firms seem to emerge as a type of pragmatically based ‘third way’ between pure public and pure private production.

We find an inverse-U shape relationship between municipalities size and the decision to partially privatize the service. Furthermore, municipalities that cooperate use more commonly mixed firms. This latter result is particularly relevant for solid waste collection. Both the size of the municipality and the decision of cooperate or not have influence on the possible exploitation of scale economies and the amount of transaction costs that the local government affords. Hence, these cost considerations condition the choice of using or not hybrid organizational forms.

In the same direction, we obtain evidence that local governments are more prone to use mixed firms when the specific transaction costs of the service are high, and when industrial interests are weaker. Those costs and weak local interests should prevent the choice of pure private production. In addition to this, the use of mixed firms is more likely when fiscal burden of local governments is high. Financial constraints prevent the choice of pure public production.

Hence, local governments make use of mixed firms when cost considerations, financial restrictions and private interests exert contradictory pressures. On the contrary, political and ideological factors do not have any influence on the local government decision of using or not mixed firms.

Through our research several interesting questions have arisen, such as whether mixed firms replace mostly pure public or pure private production (if there is any significant difference between these two potential origins). In the same way, knowing the detailed percentage of government ownership in mixed firms would likely provide interesting additional insights. Obtaining the information on these issues and, therefore, being able to better analyze the dynamics of partial privatization is in our agenda for future research.

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TABLES

Table 1 Solid Waste Collection and Water Distribution (percentage of concessions and percentage of population), Spain 2003

	Public		Private	Hybrid
	Public bureaucracy	Public firm	Private production (contracts)	Mixed firm
	Percentage of municipalities			
Solid Waste Collection (adjusted total)	24.2	12.4	56.3	7.0
Water Distribution (adjusted total)	27.7	23.9	41.8	6.4
	Percentage of population served			
Solid Waste Collection (adjusted total)	14.8	12.4	67.0	5.6
Water Distribution (adjusted total)	13.8	34.1	40.2	11.7

Notes: Municipalities over 2,000 population.

n=540 (for solid waste collection), and n=548 (for water distribution).

Percentages do not add up to 100% because one municipality in solid waste collection and two municipalities in water have public and private production coexisting in the same jurisdiction. This represents 0.1% of municipalities and 0.2% of population served, for both services.

Source: Based on Universitat of Barcelona survey (Bel 2006).

Table 2. Estimates of the equation of factors explaining the use of mixed firms (logit)

	Specification (1)	Specification (2)
Pop	5.31e-06 (1.42e-06)***	5.56e-06 (1.42e-06)***
Pop ²	-2.04e-12 (5.31e-13)***	-2.09e-12 (5.17e-13)***
Coop	1.27 (0.25)***	1.26 (0.25)***
transaction_costs	0.66 (0.26)**	0.69 (0.25)***
Fiscal_burden	2.99 (1.23)**	3.06 (1.20)**
industrial_interests	-153.57 (77.87)**	-126.75 (65.23)**
Intercept	-3.73 (0.34)***	-4.21 (0.63)***
Mayor	0.39 (0.26)	-
Ideology	-	1.12 (1.06)
N	886	985
Pseudo R ²	0.09	0.09
χ^2 (joint sig.)	40.80***	44.91***
Log pseudolikelihood	-219.009	-243.75

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

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

Table 3. Distribution of population for municipalities that use mixed firms

	Water distribution			Solid waste		
	Municipalities (cooperate)	Municipalities (no cooperate)	T-statistic (Average differences)	Municipalities (cooperate)	Municipalities (no cooperate)	T-statistic (Average differences)
Number municipalities	20	28		16	9	
Population (Average)	22,458	125,461.1	2.74***	15,003.69	134,397.9	2.51**
Population (Standard deviation)	18,006.99	166,578.5		15,315.46	191,857.5	

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

Table 4. Estimates of the equation of factors explaining the use of mixed firms for water distribution (logit)

	Specification (1)	Specification (2)
Pop	5.77e-06 (3.14e-06)*	5.87e-06 (2.22e-06)***
pop ²	-2.75e-12 (5.11e-12)	-2.55e-12 (2.96e-12)
Coop	0.97 (0.34)***	0.94 (0.32)***
fiscal_burden	3.39 (1.51)**	3.47 (1.47)**
industrial_interests	-216.07 (113.01)**	-185.01 (97.77)**
Intercept	-2.90 (0.35)***	-3.92 (0.81)***
Mayor	0.45 (0.33)	-
Ideology	-	2.31 (1.44)
N	447	496
Pseudo R ²	0.08	0.08
χ^2 (joint sig.)	18.50**	22.43***
Log pseudolikelihood	-133.189	-144.23

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

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

Table 5. Estimates of the equation of factors explaining the use of mixed firms for solid waste collection (logit)

	Specification (1)	Specification (2)
Pop	2.99e-06 (5.23e-06)	3.70e-06 (5.47e-06)
pop ²	3.13e-12 (8.43e-12)	2.19e-12 (8.81e-12)
Coop	1.75 (0.46)***	1.77 (0.45)***
fiscal_burden	2.69 (2.19)	2.85 (1.98)
industrial_interests	-88.29 (83.79)	-67.80 (66.24)
Intercept	-4.01 (0.61)***	-3.69 (0.90)***
Mayor	0.31 (0.42)	-
Ideology	-	-0.70 (1.53)
N	439	489
Pseudo R ²	0.10	0.10
χ^2 (joint sig.)	18.24***	19.17***
Log pseudolikelihood	-84.15	-88.82

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

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