

SIMILAR PROBLEMS, DIFFERENT SOLUTIONS: COMPARING REFUSE COLLECTION IN THE NETHERLANDS AND SPAIN

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Because of differences in institutional arrangements, public service markets, and national traditions regarding government intervention, local public service provision can vary greatly. In this paper we compare the procedures adopted by the local governments of The Netherlands and Spain in arranging for the provision of solid waste collection. We find that Spain faces a problem of consolidation, opting more frequently to implement policies of privatization and cooperation, at the expense of competition. By contrast, The Netherlands, which has larger municipalities on average, resorts somewhat less to privatization and cooperation, and more to competition. Both options – cooperation and competition – have their merits when striving to strike a balance between transaction costs and scale economies. The choices made in organizational reform seem to be related to several factors, among which the nature of the political system and the size of municipalities appear to be relevant.

INTRODUCTION

This paper compares local government systems for the organization of solid waste collection in The Netherlands and Spain, the contracting out of which, it is often argued (for example, Savas 1987; Domberger and Jensen 1997), serves to improve the efficiency of the service within the public sector. Indeed, contracting out, it has been suggested, may result in a better incentive structure for managers and act to promote competition for the market. Moreover, contracting out would seem to facilitate the exploitation of scale economies (Donahue 1989). However, these potential cost advantages must be set against the higher transaction costs incurred when contracting out. A review of the literature shows that it has tended to cast doubts on the savings to be made from private production, arguing that asset specificity is also of importance for waste collection, and that the unique characteristics of local service markets means a considerable amount of information is required to guarantee effective competition (Bel *et al.* 2007, 2010; Dijkgraaf and Gradus 2007; Bel and Warner 2008; Warner and Hefetz 2008). All in all, therefore, governments would appear to play a critical role in managing these markets, where the key question must be whether these authorities have the opportunity to exploit scale economies and promote competition, and – at the same time – to minimize transaction costs.

Municipalities in Spain, according to Warner and Bel (2008), are opting increasingly for mixed (public-private) firms and inter-municipal cooperation. In the Spanish situation, where little emphasis is placed on competition, the main concern appears to be with maintaining the benefits of economies of scale. However, elsewhere, more specifically in The Netherlands and some of the Scandinavian countries, local authorities implement a more mixed policy, emphasizing certain elements of a competitive market approach while maintaining the benefits of scale economies. Interestingly, in other European countries

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such as the UK, inter-municipal cooperation is not used for service provision because of the marked emphasis on market methods (Kelly 2007).

Inter-municipal cooperation is also a significant feature in the US, where local fragmentation is marked. In the US, inter-municipal cooperation is usually not compatible with private production (for example, Warner and Hefetz 2002a, b; Levin and Tadelis 2010), although it is seen as a form of contracting out. Indeed, many US local governments contract out with other local government or public agencies and, as such, delivery is the responsibility of an external (public) producer (Warner and Bel 2008). However, inter-municipal cooperation in the US differs from the way in which this organizational form is understood and implemented in the countries we study here. In neither The Netherlands nor Spain does inter-municipal cooperation involve the contracting out to another local government or public agency; rather, it involves participating in multi-government joint authorities.

Interestingly, both The Netherlands and Spain are EU members that operate within the latter's framework of legislative competition. However, there is no clear trend towards privatization in these countries (or, for that matter, in Europe as a whole, see Dijkgraaf and Gradus 2008c). In The Netherlands, there has been a comparatively greater emphasis placed on the use of public firms, with considerable managerial autonomy, but with ultimate control remaining in the hands of the owner governments. These public firms compete for contracts with private firms in a growing number of Dutch municipalities. By contrast, in Spain, less emphasis is given to public firms and where they do exist, they do not compete for contracts outside their own municipality. By way of an alternative, the relatively small average municipality size in Spain has resulted in many instances of inter-municipal cooperation.

Managing the market, either by means of competition or inter-municipal cooperation, is likely to have had positive effects on delivery costs. However, according to empirical evidence for The Netherlands, no systematic cost differences are found when comparing private production with that of public firms that had won a contract through competition (Dijkgraaf and Gradus 2003, 2007). Similarly, in the case of Spain, evidence shows that public and private production do not present any systematic cost differences (Bel and Costas 2006). Those municipalities that cooperate, however, report lower costs than those that do not (with cost differences disappearing in municipalities with more than 20,000 inhabitants, when scale economies have been exploited). It is clearly of interest, therefore, to gain an understanding of the institutional and political structures that can influence choices in the case of solid waste delivery.

This paper provides an explanatory analysis of the nature of differences in solid waste collection in Spain and The Netherlands. In the section that follows, we describe public sector organizations in the two countries, focusing specifically at the local level to enable a full understanding of the policy environment in which decisions are taken. We then present an overview of the organization of solid waste collection (its collection and transport); we do not examine the related services of waste treatment, since their nature and competitive environment are markedly different (Dijkgraaf and Gradus 2008c). We then analyse both the Dutch and Spanish market structures, emphasizing the role of flexible forms because of the predominance of private firms. This provides a useful framework for the analysis that we undertake in the section on inter-municipal cooperation in the two countries. Finally, we draw our conclusions.

PUBLIC SECTOR ORGANIZATIONS AND POLITICAL ENVIRONMENT

Much has been written about the potential influence of ideological factors and political objectives on local privatization decisions. However, the empirical evidence available – including literature reviews (Bel and Fageda 2007) and meta-regression analyses (Bel and Fageda 2009), as well as country-specific evidence for Spain (Bel and Miralles 2003; Bel and Fageda 2008a) and The Netherlands (Dijkgraaf *et al.* 2003) – suggests that ideology has not played a particularly relevant role in the privatization of solid waste collection. Political objectives, by contrast, might have had a limited influence on privatization, particularly as regards private interests and their interaction with the local political process. Here we focus on the institutional and political structures in the belief that differences attributable to historical traditions might influence choices in local service delivery.

The Netherlands

In The Netherlands there were 625 municipalities (the first and smallest tier of government) in 1996, but by 2006, the number of municipalities had fallen to 458, reflecting in the main the merger of the smaller municipalities. At the same time, the overall population rose from 15.5 million in 1996 to 16.3 million in 2006, the average number of inhabitants per municipality in this period increasing from 24,790 to almost 35,664. The largest Dutch city, Amsterdam, has a population of 739,510 inhabitants. In 2006, 19 municipalities had more than 100,000 inhabitants, while only 64 Dutch municipalities had fewer than 10,000 inhabitants. The second tier of government consists of 12 provinces; in 2006, the number of cities varied from just six (Flevoland) to 83 (Zuid-Holland). The Netherlands operates a proportional electoral system and elections, based on a party list, usually take place every four years.

Dutch mayors and aldermen form a municipality's executive board. The former is appointed by central government, and his or her executive powers are limited. The number of aldermen varies according to the number of inhabitants. Since 2002, aldermen do not have to be members of the municipal council, although they need the support of a council majority. In general, the parties represented on the executive board form a majority in the council. The same structure applies in the Dutch provinces. The Royal Commissioner and deputies form the executive board. The former is appointed by central government, and his or her executive powers are also limited. In The Netherlands, the role of the provinces in the provision of government services is somewhat limited. Nevertheless, the provinces do play an important role in implementing environmental law.

Spain

The first, and most basic, level of local government is the municipality. Unlike the situation in The Netherlands, Spain has not experienced a consolidation of these entities, so while in 1996 there were 8,097 municipalities, by 2006 this figure had increased to 8,110. Many of these are relatively small: in 1996, 5,931 municipalities (73 per cent of the total) had fewer than 2,000 inhabitants, while in 2006, the number had fallen slightly to 5,836 (72 per cent of the total). Hence, the average population per municipality is low: the average number of inhabitants per municipality was 4,899 in 1996 and 5,513 in 2006. This increase in the average size reflects, in the main, the marked increase in the population of Spain (8.8 per cent) due to immigration between 2001 and 2006.

Local elections in Spain are based on party lists and the members of the municipal council are elected on a proportional basis. The mayor is then elected indirectly by the

members of the municipal council. An absolute majority is required for a mayor to be elected after the first round of voting. If no candidate obtains this majority then the name leading the list that obtained most votes at the local election is elected mayor. The mayor is responsible for appointing the members of the municipal government, all of whom must be existing members of the municipal council.

The next tiers in the local government framework are constituted by the counties ('comarcas') and provinces (hereinafter *provincias* to distinguish them from the Dutch provinces). The counties are to be found in just a few regions (for example, Catalonia), whereas the *provincias* exist all over Spain, totalling 50 in all. In general, the county and provincial governments (*Diputación*) are elected indirectly. Their respective councils are formed on the basis of the results obtained in the local elections by all the parties that participated in the territory of each jurisdiction. Only members of the municipal councils can sit as members of the county council or the provincial council. The members of the county/provincial council elect the president, and they are responsible for appointing the members of the corresponding government, all of whom must be members of the council.

Summary

At the municipal level, there are great differences between Spain and The Netherlands. The average Spanish municipality is smaller in population than its Dutch counterpart. Interestingly, in The Netherlands, central government appoints the Dutch mayor, while the municipal council elects the Spanish mayor and, as a result, the Spanish municipal executive power is more politically oriented. The same characteristics are equally apparent at the provincial level. Table 1 summarizes the main differences between the two countries.

Local governments in Spain enjoy greater power when it comes to engaging more flexible organizational forms such as mixed public-private firms. They have greater freedom to set up joint political governance bodies, which in turn enjoy greater flexibility when deciding how to organize, for example, the service that concerns us here, the delivery of a solid waste collection service by municipal cooperation. These differences are particularly significant since empirical evidence indicates that scale economies exist in this service for populations of around 20,000 inhabitants (Stevens 1978; Dijkgraaf and Gradus 2003; Bel and Costas 2006). Since most Spanish municipalities fall below this optimal size, strong local power means that more flexible organizational forms (such as cooperation) can be experimented with in order to address the scale problem.

ORGANIZATION OF SOLID WASTE COLLECTION

Dutch and Spanish municipalities are under a legal obligation to provide collection services for municipal waste, but they are free to choose whether to deliver this service

TABLE 1 *Main differences in public sector organization*

	Netherlands	Spain
Number of municipalities (2006)	458	8,110
Average size (2006)	35,664	5,513 (18,402)*
Mayor	Appointed by central government	Elected (indirectly) in local election
Empowerment of local government	Limited	Strong

*Figure in brackets shows the average population in municipalities over 2,000 inhabitants in Spain (much closer to the Dutch average).

themselves or to contract it out to outside firms. In this section we describe the organization of the solid waste collection market in both countries.

Data and sources

Our data on the amount of waste and the methods of waste treatment applied in The Netherlands are for 2006 and are based on a dataset for all 458 municipalities produced by the Dutch Waste Management Council (see Senternovem 2006). Data for Spain are for 2003 and are taken from the *II Survey on Local Services*, conducted in 2003–2004 by the research unit 'Public policies and economic regulation' (*ppre*), at the University of Barcelona. This survey provides information for 540 municipalities with a population above 2,000 inhabitants, which represents almost 25 per cent of Spanish municipalities of this size. It is worth remembering at this point that the average population of the Spanish municipalities with more than 2,000 inhabitants is 18,402. This figure is considerably greater than the overall Spanish average (5,513), and much closer to the average Dutch population (35,664). Hence, while differences in population sizes are initially important, restricting the Spanish sample to cities above 2,000 reduces such differences in average size and allows more meaningful comparisons to be made. Bel (2006) contains detailed information on the survey methodology and the data.

The Netherlands

In 2006, 174 Dutch municipalities (38 per cent of the total, representing 29 per cent of the population) were contracting out waste collection to a private firm, while 115 municipalities (25 per cent of the total, representing 27 per cent of the population) were contracting the service out to a public firm. Over the last decade, public firms have begun to compete with private firms for contracts (Dijkgraaf and Gradus 2008b) and contracting out now involves both private and public firms, and is a practice adopted in 63 per cent of the municipalities (representing 58 per cent of the population). A third group, 14 per cent of the municipalities (9 per cent of the population), operate a municipal waste collection service in cooperation with neighbouring cities. The remaining municipalities collect the waste themselves (that is, 23 per cent of the municipalities, representing 35 per cent of the population). Tables 2a and 2b give further details.

In The Netherlands, unlike in Spain, a public body is responsible for overseeing compulsory inter-municipal cooperation, something we discuss further below. Mixed firms do not exist in The Netherlands. Over time, the number of municipalities using a public firm has increased, while municipal cooperation and self-supply has decreased, and private collection has remained more or less stable (Dijkgraaf and Gradus 2008a).

TABLE 2a *Form of production of refuse collection in The Netherlands (municipalities) (%)*

Municipality size (population)	Netherlands (2006)				
	Public unit (bureaucracy)	Public firm	Mixed firm	Private firm	Other
986–10,000	9.4	25.0	0.0	40.6	25.0
10,001–30,000	19.5	23.6	0.0	44.3	12.6
30,001–50,000	27.7	20.5	0.0	37.3	14.5
50,001–100,000	42.5	32.5	0.0	12.5	12.5
More than 100,000	44.0	44.0	0.0	12.0	0.0
Total (weighted)	22.9	25.1	0.0	38.0	14.0

TABLE 2b *Form of production of refuse collection in The Netherlands (population) (%)*

Municipality size (population)	Netherlands (2006)				
	Public unit (bureaucracy)	Public firm	Mixed firm	Private firm	Other
986–10,000	10.3	26.8	0.0	40.9	21.9
10,001–30,000	23.1	23.1	0.0	41.9	11.9
30,001–50,000	34.3	20.6	0.0	30.5	14.6
50,001–100,000	34.4	47.8	0.0	12.0	5.8
More than 100,000	67.0	7.5	0.0	25.6	0.0
Total (weighted)	35.3	26.6	0.0	28.7	9.4

Interestingly, in large Dutch cities, self-supply is much more common than firm delivery, while in small municipalities firms play a much larger role.

Spain

In the case of Spain, we have collected data for municipalities with more than 2,000 inhabitants. In 2003, 56 per cent of these municipalities contracted out solid waste collection to private firms and, thus, two-thirds of the population were served by a private firm, since the average population of municipalities with private production is higher than that of municipalities with public production. Direct production (by the responsible bureaucracy) was present in almost a quarter of the municipalities (15 per cent of the population), whereas 12 per cent of the municipalities (and 12 per cent of the population) were served by a public firm, which ultimately comes under government control but which, nevertheless, operates under commercial law. Tables 3a and 3b give further details.

Finally, 7 per cent of the municipalities (6 per cent of the population) were, in 2003, served by mixed firms. As Warner and Bel (2008) explain, ownership in these mixed firms is shared between the government and the private sector, with the government retaining an important stake in the firm, albeit with the acknowledgement that the firm's operations are governed by commercial law. The private partner tends to be a large firm with a consolidated position in the market for the private production of the local service. In such instances, the day-to-day business is usually conducted by the private industrial partner, with the government retaining control over certain strategic decisions. Within this organizational framework, municipal (or supra-municipal) governments enter into long-term contracts with private firms through joint venture agreements.

TABLE 3a *Form of production of refuse collection in Spain (municipalities) (%)*

Municipality size (population)	Spain (2003)				
	Public unit (nureaucracy)	Public firm	Mixed firm	Private firm	Other
2,001–10,000	27.1	13.0	8.2	51.7	0.0
10,001–30,000	20.0	9.2	4.3	66.5	0.0
30,001–50,000	14.5	18.4	2.6	64.5	0.0
50,000–100,000	9.6	11.0	5.5	72.6	1.4
More than 100,000	14.0	17.5	3.5	64.9	0.0
Total (weighted)	24.2	12.4	7.0	56.3	0.1

TABLE 3b *Form of production of refuse collection in Spain (population) (%)*

Municipality size (population)	Spain (2003)				
	Public unit (bureaucracy)	Public firm	Mixed firm	Private firm	Other
2,001–10,000	26.1	10.8	8.8	54.3	0.0
10,001–30,000	19.6	9.5	4.5	66.4	0.0
30,001–50,000	15.1	18.9	2.6	63.4	0.0
50,001–100,000	9.5	10.8	5.0	73.0	1.7
More than 100,000	9.5	14.1	5.3	71.1	0.0
Total (weighted)	14.8	12.4	5.6	67.0	0.2

Notes: In building the figure for 'Total', gross percentages resulting from the sample have been adjusted. To do so, we have taken into account the different frequency of responses to the Survey obtained across municipality sizes. 'Other' means that the city territory is divided into different service areas. One (or some) of them are served by public firms and one (or some) are served by private firms. Municipalities over 2,000 pop. n = 540.
Source: Data drawn from G. Bel. 2006a. *Economía y política de la privatización local* (Economics and Politics of Local Privatization). Madrid: Marcial Pons, pp. 196, 198, reproduced with permission.

Little can be said about the dynamics of the waste collection sector in Spain, since up-to-date data are unavailable for the country as a whole. However, data for the region of Catalonia show that practices involving contracting out to private contractors are stable over time. In 2000, 81.7 per cent of Catalan municipalities with a population over 1,000 inhabitants had resorted to private production for their waste collection (Bel and Costas 2006). In 2006, the use of private firms stood at 81.2 per cent (Bel and Fageda 2007b).

Summary

A comparison of practices in Spain and The Netherlands shows that market shares for direct production by the responsible bureaucracy are quite similar in the two countries if measured in terms of the number of municipalities, although this is not the case if measured in terms of the share of population. Private firms have a higher share of the market in Spain, while the market share of public firms is much higher in The Netherlands than it is in Spain.

In Spain, private production is virtually equivalent to contracting out, since public firms only collect waste within their own municipalities. One reason for this could be that local governments in Spain have more power than their Dutch counterparts. Hence, political competition between cities might well be stronger, and this might have led to a certain reluctance on the part of some authorities to contract out to another city government, and thus discouraged competition from public firms. Finally, local public firms in Spain require legal authorization before they can participate in contracts outside their jurisdiction, and the bureaucratic procedures that must be gone through in order to obtain this permission can be lengthy and taxing. These obstacles serve to discourage public firms from competing for external contracts. Thus, in Spain there tends to be no competition for contracts between public and private firms, whereas in The Netherlands levels of competition are on the increase.

Interestingly, in The Netherlands, public production increases with municipality size while in Spain public production is more common among the smaller municipalities. Bel and Miralles (2003) suggest that this pattern reflects the fact that the high transaction costs associated with the contracting out of the solid waste collection service have a greater impact on the smallest municipalities. However, the trade-off between the savings to be

made from contracting out and the high transaction costs is enhanced if the population increases.

Finally, inter-municipal cooperation is not strictly comparable between the two countries. In The Netherlands, inter-municipal cooperation typically involves a few municipalities whose joint efforts to deliver this service, and all other municipal cooperation agreements for that matter, are run as a public service. By contrast, in Spain, inter-municipal cooperation tends to mean that municipal governments engage in partnerships under a joint authority in governance in which all the governments play a role. In this situation, a choice can then be made between different forms of service delivery: public production, private production, or mixed firms. Hence, inter-municipal cooperation is not strictly linked to public production, and cooperation and privatization are not incompatible (Bel and Fageda 2006, 2008a). Inter-municipal cooperation is discussed in more detail below.

MARKET STRUCTURE

Here we describe the structure of the solid waste collection market using a measure of concentration, the Hirschman-Herfindahl index (HHI). HHI can be defined as the sum of the squared market shares, and lies between 0 (full competition) and 1 (monopoly). The number of (artificial) competitors active in the market can be estimated by $1/\text{HHI}$. The advantage of using HHI over simple concentration rates consists in its ability to take into account the number of firms and the spread in size. To provide additional information, the concentration ratios CR1 and CR4 were also considered. CR1 is defined by the market share of the largest company, while CR4 is the market share of the four largest companies.

The Netherlands

Three firms dominate the market in The Netherlands: SITA serves 74 municipalities, Van Gansewinkel 32, and AVR 23. The activity of SITA is evenly spread over the country (being active in 10 of the 12 provinces). Van Gansewinkel is active in six provinces (mostly in the south of the country). Interestingly, AVR began life as a public company in the region of Rotterdam, becoming private in 2006, and today it is active in four provinces. These large private firms are active in small and large municipalities alike. This characteristic is also clear if we divide the markets into municipality size groups. As can be seen in tables 4a and 4b, SITA is the leading firm in all groups, both in terms of concessions and population. The market shares of Van Gansewinkel and AVR are also surprisingly stable over the different groups, although they exchange second and third places with each other. The tables clearly illustrate the dominance of these three firms on the private side of the market. However, their market position would seem to have been weakened by the entry of a number of public firms. Indeed, in those provinces in which public firms have entered the market for contracts, prices have fallen (Dijkgraaf and Gradus 2008b).

The 2006 Herfindahl concentration index for private firms in the Dutch national market is 0.23 with respect to population and 0.24 with respect to the number of municipalities (or concessions). Compared with a threshold value of 0.18 used by the regulators, this means that the market is concentrated. If we take the province as our level of study, the concentration is even higher, although it is not spread evenly over the country. Some provinces do not have any private collection firms at all (Flevoland and Friesland), while others have a high incidence of such firms. At this provincial level, the HHI stands between 0.22 (Noord-Brabant) and 1.0 (Drenthe).

TABLE 4a *Market shares (in %) and concentration indexes in The Netherlands (concessions private firms 2006)*

	N	Leading group	Share (%)	Second group	Share (%)	Third group	Share (%)	CR1	CR4	HHI
Total	174	SITA	42.0	Van Gansew.	20.1	AVR	13.2	0.420	0.828	0.241
Total (population > 10,000)	148	SITA	41.9	Van Gansew.	22.3	AVR	12.2	0.419	0.838	0.247
Municipal population > 30,000	39	SITA	35.9	Van Gansew.	28.2	AVR	15.4	0.359	0.821	0.238
Population 10,001 to 30,000	109	SITA	44.0	Van Gansew.	20.2	AVR	11.0	0.440	0.844	0.256
Municipal population > 10,000	26	SITA	42.3	AVR	19.2	Gansew.	7.7	0.423	0.769	0.235

TABLE 4b *Market shares (in %) and concentration indexes in The Netherlands (population served by private firms 2006)*

	N	Leading group	Share (%)	Second group	Share (%)	Third group	Share (%)	CR1	CR4	HHI
Total	174	SITA	35.6	Van Gansew.	23.8	AVR	20.5	0.356	0.853	0.231
Total (population > 10,000)	148	SITA	35.3	Van Gansew.	24.4	AVR	20.6	0.353	0.857	0.232
Municipal population > 30,000	39	SITA	29.1	AVR	28.6	Van Gansew.	28.3	0.291	0.875	0.249
Population 10,001 to 30,000	109	SITA	43.1	Van Gansew.	19.6	AVR	10.7	0.431	0.833	0.248
Municipal population > 10,000	26	SITA	41.8	AVR	19.0	Van Gansew.	8.9	0.418	0.771	0.239

As discussed above, public firms increasingly act as competitors to private firms and, as such, the HHI can be calculated by including these public firms as well. At the national scale, the 2006 Herfindahl index is now only 0.08 (see table 5) suggesting a competitive market. Nevertheless, concentration might be intense at the provincial level, since the Herfindahl index is very high for a number of provinces. At this provincial level, the HHI stands between 0.16 (Noord-Brabant) and 1.0 (Friesland), with all contracts being awarded to just one public firm.

The increasing importance of Dutch public firms becomes apparent also if we compare the HHI over time. In table 5 the two HHIs are compared for the years 2002 and 2006. The HHI has decreased over time, both when public firms are excluded and included. However, for the private HHI, the decrease is more moderate than for the HHI including

TABLE 5 *Change over time in the concentration index (HHI) in The Netherlands*

Data year	HHI private	HHI private/public
2002	0.27	0.11
2006	0.23	0.08

Note: the HHI is calculated in population.

public firms. Interestingly, in some provinces, municipal co-operation has resulted in the creation of public firms, thus strengthening competition further.

Spain

In Spain, the market share of the leading firm (*Fomento de Construcciones y Contratas* – FCC) reaches 33 per cent of concessions and 52 per cent of the population served (Bel 2006). The two other leading firms are Ferrovial-Cespa (18 per cent of concessions and 17 per cent of the population) and ACS-Urbaser (14 per cent of concessions, 16 per cent of the population). Taken together, all three major firms concentrate 65 per cent of the concessions and 85 per cent of the population served. If we consider the market of the larger municipalities separately (population > 10,000), the share of the leading firms is even higher (72 per cent of concessions altogether). If we add together the market shares of the first four leading groups, we see that they concentrate two-thirds of the concessions (three-quarters in medium and large size cities) and almost 90 per cent of the population. As discussed earlier, public firms do not compete for concessions in Spain, so in our analysis of market concentration we consider private firms only. Tables 6a and 6b give further details.

The Herfindahl-Hirschman index is 0.16 for concessions and 0.33 for population. Compared with the threshold value of 0.18, the market is indeed concentrated. Moreover, the results at the regional level usually show degrees of concentration that are higher than those found for Spain as a whole. Since the data available for the Spanish market relates to just one year, we cannot draw any inferences about the dynamics of concentration over time. However, comparable data for the region of Catalonia in 2000 and 2006 show a

TABLE 6a *Market shares (in %) and concentration indexes in Spain (concessions 2003)*

	N	Leading group	Share (%)	Second group	Share (%)	Third group	Share (%)	CR1	CR4	HHI
Total	350	FCC	32.9	Ferrovial	18.3	Urbaser	14.0	0.329	0.680	0.163
Total (population > 10,000)	282	FCC	36.2	Ferrovial	19.1	Urbaser	16.7	0.362	0.745	0.198
Municipal population > 30,000	144	FCC	39.9	Ferrovial	22.9	Urbaser	19.6	0.396	0.840	0.251
Population 10,001 to 30,000	138	FCC	32.6	Ferrovial	15.1	Urbaser	13.0	0.326	0.638	0.152
Municipal population < 10,000	68	FCC	19.1	Ferrovial	14.7	*	*	0.191	0.412	0.071

TABLE 6b *Market shares (in %) and concentration indexes in Spain (population served by private firms 2003)*

	N	Leading group	Share (%)	Second group	Share (%)	Third group	Share (%)	CR1	CR4	HHI
Total	350	FCC	52.0	Ferrovial	16.9	Urbaser	16.2	0.520	0.862	0.326
Municipal population >30,000	144	FCC	55.2	Ferrovial	17.1	Urbaser	16.1	0.552	0.906	0.361
Population 10,001 to 30,000	138	FCC	33.4	Urbaser	16.2	Ferrovial	14.7	0.334	0.677	0.164
Municipal population <10,000	68	Ferrovial	19.7	FCC	17.7	*	*	0.197	0.464	0.084

Note: * The sample of municipalities with a population below 10,000 does not allow us to identify with sufficient accuracy the name of the third group/firm in this segment.

Source: Data drawn from G. Bel, 2006a. *Economía y política de la privatización local* (Economics and Politics of Local Privatization). Madrid: Marcial Pons, p. 243, reproduced with permission.

TABLE 7 *Change over time in the concentration index (HHI) in Catalonia*

	Data year	HHI concessions	HHI population
Sample 1 (103)	2000	0.106	0.268
Sample 2 (103)	2006	0.131	0.304

Note: Numbers in brackets represent number of municipalities in the sample. Original sources are the survey used in Bel and Costas (2006) for 2000 and a more recent survey conducted on behalf of the Antitrust Commission of Catalonia for 2006 (Bel and Fageda 2007b). Both surveys provided information on a larger sample of municipalities with private production: 152 for 2000 and 207 for 2006. To compare concentration indexes in both years we have selected all municipalities (N = 103) for which information was obtained in both surveys. Hence, the sub-samples used are strictly comparable.

trend of increasing concentration in this region, as table 7 shows. Our data for Catalonia are taken for 2000 and 2006, and are based on a survey of local services run by the *ppre* research unit at the University of Barcelona and the Catalan Competition Commission [detailed information regarding survey methodology and data can be seen in Bel and Costas (2006) and Bel and Fageda (2007b)]. Indeed, the HHI for concessions increased by almost 25 per cent between 2000 and 2006, while the HHI for population served increased by 13 per cent between these two dates. As the incidence of contracting out to private firms did not change in this period, the concentration of the largest firms has in all likelihood increased. Since Catalonia is the region with the largest private market of concessions, our evidence suggests that increasing concentration should be a concern for Spain as a whole.

Spain has a dual market, which in the case of The Netherlands is not so marked. Market concentration indexes for the Spanish market provide strong evidence for the existence of this dual market (Bel 2008; Bel and Fageda 2008b). Major firms are more likely to be the contract holders in large municipalities as well as in those municipalities in which more firms have participated in the bid for the previous contract. Hence, major firms tend to operate in large municipalities (as well as at the supra-national level, with some of them being active players in foreign markets, including the United Kingdom – Davies 2007).

Although more firms participate in the bids for the most profitable contracts, the three major firms are the usual bidders. Given that the average number of bidders is below four, even in the largest municipalities, there would seem to be a highly oligopolistic sector in this segment of the market. By contrast, smaller regional or local firms are more likely to be the contract holders in small municipalities, which similarly tend not to receive many bids for their contracts. Thus, these smaller firms can operate as a local monopoly that does not suffer any market competition, because very few firms (if any, other than the incumbent,) tend to participate in the bids for the contract (Bel and Fageda 2008b).

Summary

Concentration indexes in The Netherlands are lower than those in Spain, and show a tendency to decrease rather than increase. In The Netherlands, the difference between concentration indexes when public firms are alternately excluded and included is relevant, since public firms in The Netherlands bid for contracts in municipalities outside their own jurisdiction, which is not the case in Spain. The expanding role of Dutch public firms probably counteracts the dominating tendency of private firms, as can be seen in Spain.

In Spain, the dominance of the major firms in the large municipalities, combined with local monopolies in small municipalities, seems to indicate that the intensity of competition in local markets is lower than optimal from a social welfare point of view. It also tells an interesting story in terms of market dominance and political power. According to findings reported in Bel and Fageda (2008b) in their study of the region of Catalonia, large nationwide firms tend to be associated with contracts awarded by municipalities that are governed by national political parties, whereas municipalities ruled by regional parties seem more likely to award contracts to local or micro-regional private firms. This would appear to suggest quite clearly that market dominance has important political implications for local governments. In The Netherlands as well, the dominance of the private parties is important, but the political links are much weaker than in Spain.

IMPORTANCE OF INTER-MUNICIPAL COOPERATION

The Netherlands

In The Netherlands, inter-municipal cooperation (WGR) is employed for certain government services including fire brigades, solid waste collection, and health care. Municipalities are free to choose whether they actually work alone or together in the WGR. For solid waste collection, only 14 per cent of the Dutch municipalities use inter-municipal cooperation, falling from 19 per cent in 2002 (Dijkgraaf and Gradus 2008b). The organizations that manage inter-municipal cooperation (hereinafter *cooperations*) are not only responsible for waste collection, but actually collect the waste themselves. They act, therefore, as a substitute for a municipal public unit or a firm (public or private).

There are no direct elections for WGR board members and inter-municipal *cooperations* are mainly run by mayors and aldermen. On a day-to-day basis, civil servants manage the municipal *cooperations*, and, as such, the political profile of the municipal cooperation is low. All *cooperations* are run as a public service. Some of the political parties are, however, in favour of direct elections for municipal *cooperations*.

Spain

In Spain, almost half the municipalities with a population above 2,000 provide solid waste collection through inter-municipal cooperation. Table 8 shows the frequency of inter-municipal cooperation in Spain and the different forms of production (private, public

TABLE 8 *Inter-municipal cooperation in solid waste collection in Spain, 2003 (municipalities >2,000 inhabitants)*

	Municipalities (%)	Mean population
Cooperation at supramunicipal level	44.0	20,128
<i>Production form (only municipalities that cooperate)</i>		
Private production	51.3	23,330
Public production	38.6	17,219
Mixed firm production	10.1	15,003

Source: Data drawn from G. Bel. 2006a. *Economía y política de la privatización local* (Economics and Politics of Local Privatization). Madrid: Marcial Pons, pp. 223, 226, reproduced with permission.

and mixed) used under inter-municipal cooperation. It should be noted that through inter-municipal cooperation, municipal governments engage in partnerships under a joint authority (either a supramunicipal institution – at the county or province level – or a single purpose agency), the governance of which is assumed by all the governments involved. Within this framework, the choice is made between private production, public production or mixed firms for service delivery. Thus, cooperation and privatization are not incompatible in Spain (Bel and Fageda 2006, 2008). Indeed, the county or provincial council decides what form of production is to be used to administer solid waste collection. It is worth noting that municipalities are free to retain municipal provision or to engage in inter-municipal cooperation, since this remains a municipal responsibility.

Cooperation tends to be more frequent among small municipalities, indicating that it is used as a method to take advantage of scale economies. In addition, inter-municipal cooperation is more frequent in municipalities that retain public production, suggesting that it too may be used as an alternative to privatization. On the relationship between cooperation and delivery costs, the evidence is mixed. In Spain, inter-municipal cooperation is linked significantly to lower costs (Bel and Costas 2006; Bel and Mur 2009). By contrast, in The Netherlands, cooperation is associated with higher costs (Dijkgraaf and Gradus 2007). Internationally, it has to be said, this issue has not been analysed in many countries. However, a cost disadvantage for cooperation has been reported in Norway (Sørensen 2008, p. 1055). It seems that the type of cooperation prevalent in Spain is unique, since it fully exploits scale economies with low transaction costs.

Summary

In Spain, the use of inter-municipal cooperation is three times greater than in The Netherlands. Moreover, Spanish inter-municipal cooperation is compatible with privatization, while in The Netherlands it is not. There would appear to be two main explanations for these differences. First, the average Spanish municipality size is small and hence there is a greater need for cooperation. Second, public firms and mergers between municipalities would seem to constitute an alternative to exploit scale economies in The Netherlands.

The literature on cooperative competition and the 'Third Italy' strategy has emphasized the advantage of geographically concentrated networks of enterprises (for example, Hansen 1992) and their successful adoption by efficient local governments in Italy has been reported as significant (Brusco 1982). Nonetheless, this does not appear to be the case with the inter-municipal cooperation described here since no network of local firms or units has developed. In fact, a single organization (public in The Netherlands; public, private or mixed in Spain) is in charge of waste collection. One likely rationale for

engaging in cooperation is the ability to exploit economies of scale while preserving public monopoly as a form of service delivery. Moreover, in Spain, inter-municipal cooperation may result from the attempts made by small governments to enter the market for private contracts when they take the decision to contract out, since half the municipalities that cooperate have that service contracted out.

DISCUSSION

Table 9 summarizes the main differences identified in this paper in solid waste collection in Spain and The Netherlands. While private production is much more frequent in Spain than in The Netherlands, the frequency of contracting out is relatively similar in both countries. The explanation for this would seem to lie in the differences in the services of public firms. In Spain, public firms generally deliver the service only in the municipality(ies) that owns that particular firm. By contrast, in The Netherlands, it is quite common for public firms to bid for contracts in other municipalities. Since public firms in Spain do not usually operate beyond the limits of their own jurisdiction, contracting out is in practice equivalent to private market practices.

The fact that public firms do not operate outside the boundaries of their jurisdiction means that other public firms from outside a specific jurisdiction do not usually constitute an alternative when private contracts fail. It is perhaps because of this that mixed public-private firms (partial privatization) are relatively common in Spain, whereas they do not exist in The Netherlands. The political power wielded by local governments is stronger in Spain than it is in The Netherlands and because of this, their municipalities can engage in complex organizational forms (which include sharing firm ownership with the private sector). In this sense, greater levels of discretionary power in Spain are linked to greater organizational flexibility.

While the use of hybrid organizational forms, such as mixed public-private firms, can solve problems of contract failure and lack of capabilities or competence for public delivery in Spain, it is not a viable alternative in order to maintain a competitive environment in the solid waste collection market. Concentration indexes in The Netherlands are smaller than those in Spain, and while in The Netherlands concentration is decreasing, in Spain it would seem to be increasing. This can be explained by the fact that in The Netherlands public firms bid for contracts in municipalities outside their own jurisdiction, which is not the case in Spain. In The Netherlands, involving public firms in tendering seems to serve

TABLE 9 *Overview of differences between The Netherlands and Spain*

	Netherlands	Spain
Inter-municipal cooperation compatible with	Public production (%)	All forms of production (%)
Mixed firms	None	Yes
Dual market	None	Yes
Private production ^a	26.0	67.0 (73.0)
Tendering ^b	58.0	67.0
Division ^c	None	Yes

^aPercentages represent number of inhabitants in 2006 in The Netherlands and in 2003 in Spain. In Spain, mixed firms are included in the percentage in brackets.

^bPercentages represent number of inhabitants in 2006. In The Netherlands, public firms are also included.

^cIn Spain, a few large municipalities have been divided into districts for administrative purposes. The main examples are Barcelona (4) and Valencia (2).

to increase competition and to reduce the market power of private contractors. In Spain, public firms, mixed firms and private firms do not interact with each other. Hence, public competitors bring no competitive pressure to bear on private contractors.

A further institutional difference with significant ramifications for market structure is the fact that Spain has many more municipalities and that their average population is much smaller than in The Netherlands. One consequence of this is the existence in Spain of a dual market for solid waste, with large municipalities and large firms operating in one half, and small cities and towns with local and regional firms operating in the other. It is not profitable for large firms to operate in small cities and towns, while small local and regional firms do not have the capability to operate in large cities and metropolitan areas. As these two markets are no more than only slightly connected, competition is hindered. By contrast, large firms in The Netherlands operate across municipalities of all sizes. Indeed, population density and municipality size (inhabitants) in The Netherlands is greater, which means that most contracts have a potential appeal for the major players.

The restrictions imposed on Spanish municipalities due to low population levels (a small private market with a small number of suppliers), together with the considerable political power that local governments wield, have led many small cities and towns to engage in inter-municipal cooperation whereby the compatibility of this type of provision with all production forms is preserved. Through inter-municipal cooperation, small Spanish municipalities can exploit scale economies without the need to contract a private firm or, alternatively, they can achieve greater joint bargaining power in order to initiate a contracting process. By contrast, incidences of inter-municipal cooperation in The Netherlands are much less frequent. This is because, in contrast to Spain, inter-municipal cooperation has a cost disadvantage in The Netherlands, a finding in line with reports in Sørensen (2008).

In short, Spain has a problem of consolidation, typified by more instances of privatization and cooperation, but lower levels of competition. The Netherlands, on the other hand, presents a greater average municipality size, and as a result we find fewer instances of privatization, and less cooperation. Public firms are more widely used in The Netherlands, and this helps to some degree to overcome the competition problem resulting from the increasing levels of concentration that are emerging in the private market. The differences between the two countries as regards the size of their municipalities, the power wielded by local governments, and the extent to which public firms operate, are key factors in accounting for these differences.

Overall, contracting out might lead to saving costs thanks to the exploitation of scale economies and the promotion of market competition (Bel *et al.* 2007). However, contracting out might also lead to higher transaction costs. Spain and The Netherlands adopt distinct organizational forms in order to deal with both scale economies and transaction costs. Spanish local governments quite frequently resort to inter-municipal cooperation and mixed firms, while the use of public firms and the merging of municipalities is frequent in The Netherlands. One lesson that The Netherlands might learn could well be that a more powerful political framework for municipal cooperation is desirable if there is a wish to implement more flexible organizational forms.

Market competition may be weak in both countries since the concentration is relatively high. However, in The Netherlands, the increasing importance of public firms as external players in concessions for delivering waste has improved market competition. As regards concentration, therefore, the Dutch solution would seem to provide better results. And it is here that a lesson of potential interest emerges for Spain: encouraging public

firms to compete for contracts outside their own particular municipality could enhance competition and restrict positions of dominance.

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