ARTICLE

Costing School Transport in Spain

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ABSTRACT School transport in Spain is conceived administratively as a regular, but special, public transport service financed by the Spanish regional governments through private sector contracts adjudicated by public tendering. As such it has two special features in comparison to systems elsewhere. First, larger operators use conventional buses (rather than special school buses) and these can also be used for regular services during school hours. Second, as these are regional services, often only regional operators bid for these tenders, so contract assignment resembles a bargaining process between operators and administrations, tempering an adequate operation of the market. This problem is common to all Spanish regions. The situation described has generated high costs (i.e. 15% increase in contract costs in the past year although the number of contracts did not vary significantly). For this reason the Government of Cantabria commissioned research to examine the problem. A simple cost allocation model allowed us to detect that school transport costs were, on average, approximately 18% higher than what could be deemed reasonable. This article describes the problem, the reasons why it has occurred and explains the model built to examine it in certain detail. It also shows the immediate consequences of its application (i.e. the reaction of the main operators and their changed strategy) and the steps taken by the Regional Government, based on our results, to ensure a proper operation of the market in the future.

KEY WORDS: School transport; transport costs; cost allocation model; Spain

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Introduction

In compliance with Spanish legislation, the Regional Governments in Spain (through their Departments of Education) must offer a transport service to students from their homes to their education centres. As the financial burden of regional school transport falls on these Autonomous Communities, a process of public tendering is carried out every school year.

In the 2003/4 academic year, the total number of students served in Cantabria (a region with 500,000 inhabitants [Figure 1]) was 12,897, distributed as follows: 1993 children at nursery; 5177 primary school students; and 5727 secondary school students. The cost of the service was almost €10.5 million; this is equivalent to a daily expense of about €60,624 (€100/US$125). Although this is a heavy economic burden for a small regional administration, the problem has been artificially increased by the strategic alliances established by the transport operators to present their bids to the autonomous government.

In principle the concession of contracts by public tendering requires meeting a series of criteria, where the vehicle age, its comfort and quality, and especially the fare charged, are essential. However, as the technical level of passenger road transport companies is rather low in

Figure 1. Location of Cantabria and nearby regions
Spain, their approach to solving the tendering equation is based on the application of easily understandable, efficiency-seeking, criteria. For this reason, when the Regional Government commissioned the research on which this paper is based, we designed a simple but efficient approach with the aim of achieving two goals:

1. that the model could be easily understood by transport operators, and
2. that it should serve the Regional Government to reduce the inordinately high costs of the school transport system.

The approach described in the next sections was applied to the Region of Cantabria, but the problem of artificially high transport costs is widespread and thus our approach is applicable to all Spanish Autonomous Communities.

The remainder of the article is organized as follows: the second section sets forth the problems arising in the award of contracts for school transport services and presents the objectives of this study; the third section discusses the design of a cost model for contract tendering of school transport services; and the fourth section presents its application to the case of the Cantabrian Region. Finally, the fifth section concludes.

### School Transport Contract Tendering

The most important problems associated with the tendering of school transport services’ contracts in Spain are discussed below.

#### Structural Problems

Many companies in this market are small ‘family’ businesses dedicated almost exclusively to this kind of transport (i.e. it is their sole money-earning activity); in many cases, the bus drivers themselves are the head of the company. Thus, professionalism is practically null and the costing system very rudimentary (González, 2000); Table 1 summarizes the situation in Cantabria.

Table 1 shows that more than 80% of the companies have less than six buses; this gives an idea of the sector atomization. Conversely, the two companies with more than 20 buses were assigned the majority of contracts and move almost half of the students in the region. This occurs because these larger (and more professional) companies are able to accommodate these services as an integral part of their transport supply; therefore, they can use the ‘free’ times of the school buses to provide for other services, either regular or discretionary.
However, the transport companies themselves are not really aware of the true costs of the services provided, whatever they may be. In general, they only make a balance of all their services at the end of the year, jotting down all their returns and expenses. Then they add a commercial mark-up, a profit margin and estimate how much they would have to increase their fares the following year.

Moreover, the Regional Governments do not know the real costs they must pay annually for their school services, either. For this reason, they fix the price on the basis of the operators’ suggestions, or taking into account the situation in nearby Regions which probably have the same problems.

**Demanding Legislation**

Under current Spanish legislation school transport is considered a regular, but special, public transport service (Secretaría General Técnica, 2003); therefore, service contracts must be put out for public tender. The legislation is very demanding, especially with respect to the technical characteristics and maintenance of the vehicles. Both small and large companies must comply with this legislation and, especially, with the most recent and strictest conditions regarding the age of the fleet (Boletín Oficial del Gobierno de España, 2001).

**Internal Management Problems**

Wage increases, as well as increments in the cost of other factors (especially fuel), could be considered structural as they are caused by variations in the price index and in the fluctuations of international fuel markets. However, these are not the fundamental factors contributing to the present alteration of the market and the upward tendency in the costs of providing regional school transport services. It is our contention that the main problem relates to the cost allocation of ‘free time’ in school transport where, at least theoretically, both the bus and the driver are inactive (Moura et al., 2004).

<table>
<thead>
<tr>
<th>Company Size</th>
<th>Firms</th>
<th>Contracts</th>
<th>Students</th>
<th>Buses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 bus</td>
<td>9</td>
<td>21%</td>
<td>14</td>
<td>4%</td>
</tr>
<tr>
<td>2–5 buses</td>
<td>25</td>
<td>60%</td>
<td>119</td>
<td>31%</td>
</tr>
<tr>
<td>6–20 buses</td>
<td>6</td>
<td>14%</td>
<td>114</td>
<td>29%</td>
</tr>
<tr>
<td>21+ buses</td>
<td>2</td>
<td>5%</td>
<td>140</td>
<td>36%</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>100%</td>
<td>387</td>
<td>100%</td>
</tr>
</tbody>
</table>
The key question here is: Who should pay for the cost of school buses when they are ‘inactive’ during the day? Some operators claim that as buses are only used for school transport services, both the staff costs and financial costs associated to them must be paid by the contractor. On the other hand, the Regional Government claims that they should only pay for the costs of school transport while the bus is in service, and that they should not pay for the staff or financial costs associated to the vehicle when it is not in that use. This is obviously correct when a bus is actually being used to provide other services in its spare time.

Another difficult problem has its roots in the Spanish political structure (i.e. having Autonomous Communities). Although this has brought in important improvements in public management and socio-economic development (i.e. bridging the gap between administration and citizens), it has also brought in a fierce interregional competitiveness which translates into excessive regionalism. This, in turn, implies popular and entrepreneurial pressure on regional governments to favour local firms and for policies that would help them catch up with the level of welfare in other regions.

For this reason, indigenous firms and/or those that have a delegation in the region, exert pressure to have their bids being considered favourably. This makes it difficult, on many occasions, for operators from other regions to bid for contracts in a given region. In fact, currently 98% of school transport contracts are adjudicated to local firms or to national companies with a delegation in the region, and the menace of strike action is always present during what are usually tough negotiations.

All these factors strongly affect the contract award process for school transport, and have had the effect that public transport companies wishing to enter the tendering process establish a series of ‘understandings’ among themselves regarding the ‘allocation’ of contracts. This, cartel-like process takes into account, in many cases, the degree of compatibility of the contract with the companies’ other regular and discreitional transport services.

The end result is that typically only one company bids for each tender, highly altering the market competitiveness. In turn, this means that the ‘selected’ transport company and the Regional Government actually enter into a bargaining process, rather than competitive bidding. Although this ends up with an agreement, the threats of strike action are clear and the atmosphere is heated. In this scenario the role of the Regional Government is not easy to play because they are aware that a conflict in the sector is not socially acceptable. This situation is repeated through all the Spanish regions.

In order to improve on this, the Cantabrian Government commissioned a study by the University of Cantabria, the aim of which was to
design an efficient and easy-to-use mathematical model, capable of determining the real costs of providing school transport services. The idea was to use it as a guide to fix the price of regular school transport service contracts put out for tendering. We discuss the main ideas behind this model in the third section.

International Context

The school transport problem has many variants in different parts of the western world and it is fair to say that it is still considered an unresolved theme due to its special characteristics. For example, McGuire and Van Cott (1984) indicate that in the USA school transport is provided both by private operators and by the Districts’ administrations themselves using publicly owned buses. At the end of the 1970s approximately 230,000 buses were both publicly owned and operated by the Districts and some 100,000 were operated by private companies; recent figures suggest that 70% of the operation is solely in public hands, while the remaining 30% is a mixture of totally private and mixed public (bus ownership)/private operation. Although this coexistence of public and private operation is widespread, Merrill (1992) notes than in certain states the provision of school transport is limited by distance, and the unattended families are granted a special payment by the state (the same occurs in Spain).

In general private contract bidding has included route assignments and has been open to all comers (it is a market with low entry costs). McGuire and Van Cott (1984) analysed a sample of 275 schools in Indiana showing that the cost per mile for places with public services only (52%) was 12% higher than when private services were used. However, this result has been contested, among others by Caves and Christensen (1980), who argued that the frequently observed cost inefficiency associated with public ownership is the result of lack of competition and not public ownership per se. Notwithstanding, Hutchinson and Pratt (1999) claim that school transport costs have increased rapidly in recent years, being then 5–10% over the total system budget, and mention that although numerous studies have evaluated contracting for various goods and services, a literature search found only two studies of public versus private school bus transport. They carried out an empirical analysis for 19 school systems in Tennessee, finding that the potential savings of moving to private operation could be as high as 27%; however, the contract formats analysed were very variable (i.e. lump sum, payment by seat and mile, annual contracts, longer franchises, one or many contractors, etc.), and only one area, Anderson County, sought the lowest bid.
Although the majority of US cases found in the literature advocate privatization of school bus services (Lausberg, 2002), the Michigan Education Association (2000) warns that one of the saving graces of privatizing custodial and food services is that if the District is not satisfied with the work of the private contractor, it can bring the services back in-house. Unfortunately, this option is not usually available, because in almost all cases privatizing includes selling the entire bus fleet to a private firm. This tends to tie the District to that particular contractor, regardless of the future quality or price of the service, as the contractor holds henceforth a competitive cost advantage over other competitors (they would have to purchase new buses before being able to provide transport services to the District).

In policy terms, many ways have been suggested to minimise transport costs in the USA. For example, in Portland US$1.2 million was saved annually by limiting the start of the school day to three times – 08:00, 08:45 or 09:15 – reducing the total number of buses needed for daily home to school transport from 230 to 179 (Merril, 1992). In Martin County, Miami, a five-year plan to renovate the fleet and improve system management, advocated paying the private operator only for the actual working time plus an extra half hour dedicated to management.

In contrast to the USA, the situation in other European countries is not too dissimilar from that in Spain. For example, contracts in the UK are typically for three years and the tendering announcements are published in the official bulletin of the European Union as well as in local newspapers. Firms have to present their bids in closed envelopes which cannot be opened until a pre-specified date in a public act; thus the process appears honest and clean. Notwithstanding, it has been reported that certain entrepreneurs usually make up to three bids for different routes, even if they do not possess the vehicles to serve them: one, at a high price, the second at a medium price and the last at a low price. If they get the high priced or the medium priced bid it is good business, and if they only get the franchise at the lower priced bid, at least they guarantee some work for its vehicles and drivers. However, as the franchise is for three years, once it has been adjudicated something can always happen; for example, a new student living in a remote place may arrive. This type of circumstance is used to increase the price (over what it would really be sensible) and the administration seldom objects; in this way business can be improved along the three years (Tyas, 2006).

One of the main strategic initiatives of the UK government has been to improve the quality of local authorities. The ‘Best Value’ programme, started in 1997, aims at achieving the maximum quality level at the minimum feasible cost; this asks local authorities in England and
Wales to provide free school transport for their students (i.e. inside a certain area), and to cover at least partially the transport costs of students outside this area. Recently, this legislation has been brought into question by local authorities who advocate free school transport for all, in order to reduce the number of trips made by car (Clark, 2001).

A rare paper reports experience in Manchester where integer programming was used to assign contracts to various types of private contractors (i.e. from owners of 2–3 buses to companies with more than 1000 buses) in order to minimize costs (Letchford, 1996). The system considered 35 operators, 298 different contracts and 35 restrictions – by vehicle type – and dealt with 1180 individual bids and 57 group bids in a few seconds. Results compared favourably with those obtained by three seasoned planners of the local authority.

In Italy the tendering is also done through service contracts which are adjudicated to the lowest bid (but the maximum price is known in advance). Although several companies compete they usually reach a previous agreement whereby one offers the lowest price to gain the franchise. Interestingly, if there is no previous agreement nobody participates in the tendering process; in such cases the administration negotiates the price directly with the firm they choose. If an agreement is not reached, the contract is adjudicated to the incumbent for some months until a new tendering process is called for (Dell’ Olio, 2006).

The tendering process in France usually conjugates price and quality. Although the process does not seem to present many problems, it has been reported that there are also previous negotiations and tacit agreements among bidders, as in the rest of the countries already mentioned (Bertin, 2006).

Moving away from Europe, in Australia the use of private contracts for school transport is considered such an important issue that a committee was created where the local authority, the private operators and the users could have a say (Economic and Finance Committee, 2005). Price Waterhouse made a cost study that was immediately contested by the private operators (almost 70% small companies), who accused the authorities of being harsh and inflexible; an idea of the level of acrimony in the discussions is given by the following verbatim plea made by the representative of one company (Economic and Finance Committee, 2005):

There are situations when the government uses the big stick mentality. I will give an example. If you were tendering for a school run, the government was not happy with the price and it was unable to get you to cut back in certain areas so that you can come down to a price over which it will not pay, it will suggest to you that you put
your wife on it or you drive it yourself; therefore, you do not have to pay superannuation or pay yourself the full wages. That is said over and over again. I have been a contractor for almost 30 years, and that has been said to me over and over again.

As a result of the discussions the Committee made three recommendations:

- To create a Department of Education and Children’s Services/Contractor open forum, facilitated by an independent communicator, to ensure contractors feel their input is valued as part of the process of reviewing the cost index.
- To investigate mechanisms to establish greater rapport and understanding between Department of Education and Children’s Services, and the school bus contractors.
- To review the overall approach to school bus provision including whether the approach used by Victoria would provide greater transparency to contractors and whether the bus contract system would be more appropriately run by another department, such as the Department for Transport, Energy and Infrastructure, Public Transport Division.

We also examined a paper by Koushki et al. (1999) who reported experience in Kuwait. The operating and maintenance costs, and the life cycle of three types of buses used in school transport were compared to those in industrialized countries. They found that the abundance of qualified and cheap labour from India allowed wages to be substantially inferior to those in Europe (i.e. 39% rather than 70% of the operating and maintenance costs). Another advantage was that fuel costs were even cheaper (a third of the price) than in the USA.

To end this review, it is interesting to note that in most of Latin America the school transport problem is a totally different issue. The authorities have no legal obligations in this sense and the most they do is to grant ‘school passes’ to students that may be used to pay a substantially discounted fare (i.e. one-third in the case of Chile) on all public transport services of the city during school hours (see http://www.transantiago.cl). The discounted fare is the subject of negotiations and every year there is some unrest until the price is fixed. Sadly, the private operators of most public transport services resent this and school students tend to be discriminated against and harassed by the drivers.
A Cost Allocation Model for School Transport Services

The costs of a transport company may be classified into direct and indirect costs. The former (variable and fixed costs) are the most important (de Rus et al., 1995); in fact, the part corresponding to indirect costs is usually taken as less than 12% of the direct costs. To all these we need to add an ‘industry benefit’, or profit, typically 6% (Ibeas et al., 1998). The fixed costs include items such as vehicle insurance, amortization and financial costs. The variable costs arise due to the provision of the service and include items such as direct labour force, fuel, lubricants, tyres and vehicle maintenance (i.e. both material and labour force).

For this study we have used the ‘working day’ (7.4 h) as our temporal unit; the school transport service is perfectly defined and has to be provided cyclically throughout the academic year for 175 days. This is the most usual unit for determining school transport costs. The three stages of our model approach are now presented.

Total and Unit Direct Cost Functions by Working Day

The total direct costs $Z_{TotalDC}$ of a transport company include the total running costs ($RC$), the total direct labour force (bus drivers) costs ($LC$) and the remaining fixed financial bus costs ($FC$), thus (de Rus, 1987):

$$Z_{TotalDC} = RC + LC + FC$$

However, the total running costs can be seen as the product of a constant unit running cost ($RC_u$) by the total number of bus-kilometres travelled by the company ($k$); the total bus drivers costs are the product of a constant unit labour cost ($LC_u$) by the total number of man-hours (bus drivers) worked by the company ($b$). Finally, the total financial fixed costs can be represented by the product of a constant unit fixed bus cost ($FC_u$) and the total number of bus-days of the company ($b$). To estimate these unit costs we can simply postulate that:

$$RC_u(€/km) = \frac{Direct\ costs\ allocated\ to\ kms}{N\ of\ kms\ travelled\ by\ the\ company} = \frac{RC}{k}$$

$$LC_u(€/hpur) = \frac{Direct\ costs\ allocated\ to\ hours}{N\ of\ km\ of\ service} = \frac{LC}{b}$$

$$FC_u(€/bus) = \frac{Direct\ costs\ allocated\ to\ vehicles}{Size\ of\ company\ fleet} = \frac{FC}{b}$$
Allocation of Cost Parameters to Each Bus Providing a Service

Under the hypothesis that each contract can include several services (i.e. taking students to and from school twice would imply four services), and that each contract can be carried out with only one bus, it is easy to see that the cost objective is precisely the bus. So, for a bus doing service $i$ involving $K_b^i$ kilometres and needing $H_b^i$ person-hours of driving, we can write:

$$Z_{BusDC} = RC_u K_b^i + LC_u H_b^i + FC_u$$

Now, assuming that each contract consists of $i$ different services, to be provided by one bus during the day, the total direct costs for the contract per working day would be:

$$Z_{ContractDC} = FC_u + \sum_{i=1}^{i=n} (RC_u K_b^i + LC_u H_b^i)$$

At this point the problem arises of who must pay for the cost of the bus drivers and buses in periods when the school transport system is inactive. It is quite obvious that if the buses and drivers are truly idle, then the cost should be part of the agreement between government and operator. However, if the buses and staff can be used to help the bus company to provide other services during these idle periods, the government should certainly be entitled to a discount in the contract funds. The problem is that the authority has no means to know whether the school bus idle time is used or not by the operator in other services; it is obvious, notwithstanding, that only the bigger operators have a real chance to do this.

So, to solve this problem we proposed that these costs should be proportionally borne by the administration and the operator, depending on the hours worked, according to the distribution shown in Figure 2, which indicates that, for example, if the contract implies that the bus has to remain inactive for six of the 7.4 h making up the working day, the government should pay 18% of the idle time apart from the direct costs. On the other hand, if the bus remains idle for only two hours, the government should pay 72% of this time. The rest of the idle time should be borne by the transport company. For other cases, it is sufficient to include the number of hours worked in order to obtain the proposed cost allocation.

Total and Unit Indirect Cost Functions by Working Day

The calculation here is similar. The main difference is that the assignment of structural company costs is based on finding apportion rates (Table 2) for each physical cost parameter as a function of its
weight in the resource consumption of each cost or activity centre (Ibeas et al., 1998). The cost centres are formed according to the homogeneity of their activities from an operational and economic viewpoint; for example, we have defined:

1. Exploitation (C_1). The volume of work depends on the number of vehicles needing route scheduling and driver assignment. Therefore the cost generated by this centre is imputed to the physical parameter corresponding to the number of operating vehicles in the service.
2. Human resources (C_2). This is clearly influenced by the staff to be managed and grows with the number of employees. Therefore its cost is imputed to the number of person-hours.
3. Administrative-financial (C_3). Its activity is proportional to both the number of vehicles and the staff size. Therefore, the cost generated

<table>
<thead>
<tr>
<th>Cost centres</th>
<th>Apportioning rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Person-hours (%)</strong></td>
<td><strong>Vehicles (%)</strong></td>
</tr>
<tr>
<td>C_1: Exploitation</td>
<td>a_{11} = 0</td>
</tr>
<tr>
<td>C_2: Human resources</td>
<td>a_{21} = 100</td>
</tr>
<tr>
<td>C_3: Administrative-financial</td>
<td>a_{31} = 50</td>
</tr>
<tr>
<td>C_4: Depot and supplies</td>
<td>a_{41} = 0</td>
</tr>
<tr>
<td>C_5: Management</td>
<td>a_{51} = 100</td>
</tr>
<tr>
<td>C_6: General costs</td>
<td>a_{61} = 0</td>
</tr>
<tr>
<td>C_m: Other costs</td>
<td>a_{m1} = \ldots</td>
</tr>
</tbody>
</table>

Figure 2. Allocation of inactivity time costs
by this centre is shared by the physical parameters corresponding to number of vehicles and number of person-hours.

4. Depot and supplies (C4). It is highly recommended to have this as a separate department from an accounting point of view. If this is not the case, it must be examined as another source of indirect costs. Its activity is directly influenced by the number of vehicles under repair or maintenance. As the size of the depot is a function of the fleet size, the cost generated by this centre is apportioned to the number of vehicles in the company.

5. Management (C5). The volume of work here depends mainly on the number of employees, so its cost is assigned to the number of person-hours.

6. General costs (C6). The costs assigned to this fictitious centre are shared by the number of vehicles; that is, each vehicle is assigned an equal fixed cost corresponding to the indirect costs that are not absorbed by the previous cost centres.

For other costs, such as commercial, communications, computing, sales, rent and amortization, new cost centres can be created (Cm) or simply included in one or more of the previous ones, depending on its importance (Table 2). Thus, the formulation of the total indirect costs is:

\[ Z_{Total IC} = HC + VC \]

where \( HC \) are the indirect costs of the company attributable to driver person-hours and \( VC \) are those attributable to the number of buses. Therefore, and as in the case of the direct costs we have:

\[ HC_u (\text{€/hour}) = \frac{\text{Indirect costs allocated to hours}}{N^o \text{ of hours of service}} = \frac{HC}{h} = \frac{\sum_{i=1}^{i=m} a_{i1} \cdot C_i}{h} \]

\[ VC_u (\text{€/bus}) = \frac{\text{Indirect costs allocated to vehicles}}{\text{Size of company fleet}} = \frac{VC}{b} = \frac{\sum_{i=1}^{i=m} a_{i2} \cdot C_i}{b} \]

where \( C_i \) is the total cost of the ith cost centre, and the values for \( a_{ij} \) adopted in our case are those shown in Table 2. With this we get:

\[ Z_{busIC}^i = HC_u \cdot H_b^i + VC_u \]

and
and finally, the total costs for each contract are given by:

\[
Z_{\text{TOTAL}} = Z_{\text{ContractDC}} + Z_{\text{ContractIC}} + \text{profit(6\%)}
\]

Model Application

The cost allocation model was presented to the Government of Cantabria and to the school transport companies operating in the region. Although the basic methodology was fully accepted by both parties, some companies did not agree with the estimation of the unitary costs used to construct the curve. However, it transpired that the problem was not methodological, but of quality of data on the total number of kilometres and staff hours used by the different companies.

The first negotiations focused on discussing the values of the most significant parameters: the percentage of indirect costs and the percentage of ‘industry benefit’. In relation to the former, it was finally agreed that for the company with less contracts (i.e. only one contract) the parameter would take the value 6\%, for the company with most contracts (i.e. 92 contracts) it would be 12\%, and for the rest it would vary proportionally. The assumption was that as the number of contracts grows the company size increases and also its structural costs.

In the case of the industry benefits, the Regional Government decided to assign 6\% of the sum of the direct and indirect costs; the rationale was that this is similar to the value considered in projects adjudicated by the Ministry of Public Works. As the entrepreneurs were not happy with this the Government ended up leaving it as a variable cost, subject to the constraint that the sum of the indirect costs and the industry benefit would not exceed 18\%.

So, at the end of the day we had \(Z_{\text{ContractIC}} = \delta \ Z_{\text{ContractDC}}\) and the total cost function took the following form:

\[
Z_{\text{TOTAL,Contract}} = [(1 + \delta) \ Z_{\text{ContractCD}}] \ (1.06)
\]

where \(m \leq \delta \leq M\), and \(m = 0.06\) if the company has only one contract, \(M = 0.12\) if the company had the maximum number of contracts (in our case 92), and \(\delta\) varied linearly between \(m\) and \(M\).

It is interesting to note that in previous years the Government had detected the following problem. Although the franchising process implies that each school is assigned a different contract, as the contract contains the bus registration plates, it was found that some companies managed to attend up to three schools (depending on their class
with only one bus. In fact it was detected that 80% of the companies managed to attend two schools with one bus. For this reason, and using the model to simulate the current situation of Cantabrian schools, the Government decided to put out contracts for tendering for groups of schools sharing one bus to provide their transport. However, the transport companies’ reaction was not positive for obvious reasons. If the same bus can be used to fulfil two different contracts the benefits are higher than if this situation is taken into account in the contract definition.

Table 3 shows, as an example, what would the situation have been for the fiscal year 2003/4 if the Regional Government had managed to assign contracts using the model, and compares it to what actually happened.

After a long period of negotiation, the tendering price was finally fixed according to the following ‘political’ rules:

1. If the cost of a company currently operating the contract was 10% or less higher than the value estimated by the model, the administration increased the contract value by 6% over the value perceived in the last year.
2. If the current cost was over 10% of the value provided by the model, the administration increased the tendering price by only 3%.

It is interesting to note that the small companies accepted these conditions straight away. Thus, approximately 47% of the contracts were settled immediately. However, in general the proposal was not accepted by the larger companies. In fact, the larger transport companies started to exert pressure on the Regional Government in order to attain a higher increase. Unfortunately, given that the beginning of the school year was near, the strike threats were only too real and the administration eventually agreed to their requests.

**Table 3. Estimated cost reductions by applying the model**

<table>
<thead>
<tr>
<th>Company size</th>
<th>Actual contract assignment</th>
<th>Assignment using the model</th>
<th>Cost reduction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of contracts</td>
<td>Contract value (€)</td>
<td>Number of contracts</td>
</tr>
<tr>
<td>1 bus</td>
<td>14</td>
<td>1616.81</td>
<td>9</td>
</tr>
<tr>
<td>2–5 buses</td>
<td>119</td>
<td>13,341.87</td>
<td>73</td>
</tr>
<tr>
<td>6–20 buses</td>
<td>114</td>
<td>13,306.64</td>
<td>60</td>
</tr>
<tr>
<td>20+ buses</td>
<td>140</td>
<td>19,000.82</td>
<td>83</td>
</tr>
<tr>
<td>Total</td>
<td>387</td>
<td>47,266.14</td>
<td>225</td>
</tr>
</tbody>
</table>
granting increases of an additional 5%, on average, on top of the above-mentioned increments.

However, the administration considered that the final solution reached was not in accordance with a free market competition of public transport contracts to companies outside the region. The general idea is that this should contribute to open the market outside the environment of regional business.

Interestingly the response has been strong. Several contracts in Cantabria have recently been awarded on a free market basis, to operators from other nearby regions at the price stipulated by the model designed in this study. And this is in spite of the fact that it is difficult for operators from other regions to provide school transport services in a region other than their own. In effect, the 2004/5 academic year started in September and a previous franchising of all contract services was put up for a period of two years, extendable to another two years; 50% of the bids were adjudicated at a competitive price and in the rest the tendering was annulled because there were no bidders (as a protest against the established prices).

In these cases, the Regional Government negotiated, firm by firm, a two months extension (September–October 2004) and put out a new call for tenders, with prices that were 'more favourable to the sector', for the period November 2004–June 2005. However, at this new tendering process we had the participation of firms from other regions and these obtained some franchises that have been traditionally the stronghold of local entrepreneurs. The end result of this process was an average increase of contract prices of 7% in relation to the previous year (whilst the transport consumer price index had increased only 5.3%).

For the 2005/6 academic year, the routes comprising the 50% adjudicated to June 2005 went out for tenders for a two year period extendable for another year. However, the tendering process experienced some changes in the adjudication criteria: for example, the importance of the bid price was reduced from 40 to 20% in exchange for new criteria such as vehicle quality, age, etc. This benefited the larger national companies with a regional presence. It is interesting to note that the average price increase was only 6% although the transport consumer price index in 2005 was 9.3% (due to the large increases in fuel prices).

In summary, we believe that this is a gradual but irreversible process as now the Regional Government has a tool to estimate school transport costs which is efficient enough to put contracts for tendering at a fair price.
Conclusion

The school transport problem can be labelled an unresolved issue and the situation (in terms of legal or traditional societal requirements, etc.) varies markedly in different parts of the world. In the USA, still the majority of services are provided by public operators, a large proportion of the remaining services are given by private companies of various sizes, and a smaller proportion is provided by private operators using publicly owned buses. In Europe the governments are in general also required by law to provide free school transport but most services are privately operated; this is also the case of Australia. In other areas, such as Latin America, the Government seems to have no such obligation but usually subsided fare passes are provide to students that can be used during school hours in the week.

The private provision of school transport in Spain has implied very high costs to the regional governments, with annual increases which have not been in accordance with the increase in consumer prices or the GDP. One reason has been that, in general, for each contract tendering put out there has been only one company bidding; this illustrates the lack of competitiveness in the market which transformed the problem into a bargaining process. To try and help solving this problem in Cantabria, the regional government commissioned our cost allocation study. Although the cost allocation model designed is fairly straightforward, it is also efficient, and has the important advantage of being easily understandable by both transport operators and government officials. The model is applicable to any franchise process anywhere in the democratic world, and is a good system for public administrations to estimate reasonable reference prices that allow a proper negotiation with transport firms.

The application of the model to the case of Cantabria revealed that, on average, transport companies seemed to be receiving 18.4% more from the public administration than what should be really applicable. Small companies and those exclusively dedicated to school transport, were generally below the average values provided by the model (about 15% less), while large companies (with a wide network of all types of transport services), exceed these values in approximately 20%. The discussions and conflicts that arose in the last round of negotiations, after the model was applied, convinced the Regional Administration of the need to offer contracts to operators from other regions, to open the market and to break the oligopoly operating until the previous year. The new tendering process used the prices established by the model and these were accepted.

To end, let us note that although the level of privatization of school transport in many areas of the western world is still low, many public
administrations are moving in this direction as its short-term benefits appear to be high, seemingly unaware of the risks and uncertainties associated to it in the medium term. In this article, we have shed some light about the problems that might occur if privatizations are not conducted with utmost care. For example, it is symptomatic that those states with the higher degree of private involvement in the USA warn about the risks of falling into the hands of private entrepreneurs intent only on maximising profits, and about the weaker negotiating position encountered by administrations that have sold their fleet and delegated all services to a single firm. Similar problems may be encountered in Australia and Spain.

Notwithstanding, although the privatization process is risky, it is also full of opportunities. A successful move from public to private operation requires that some key issues, such as handling the increase of wages and fuel costs, the planning of new routes and schedules, and estimating the impact of policies such as flexible school entry hours, are managed by the public administrations in spite of their complexity and political risk. We hope the successful experience reported in this paper can be of some use in this quest.

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References


