

Temporary groups of firms in the provision of local public transport

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Abstract

SMEs can directly contract with a public body (allotment), participate as a subcontractor to prime contractor (subcontracting) or associate in a temporary group of firms. In the paper we first provide a theoretical framework of the relationship between hybrid organisations and public procurement. Then we present some empirical evidence on the efficiency in local public transport in Italy of a peculiar form of hybrid organisation, namely the temporary association of firms. Differences emerge in comparing the efficiency scores of the firm holding the proxies of the other partner: the proxy holder seems to be more efficient than the whole group.

Keywords: public procurement, temporary groups of firms

1 Introduction

Allotment and subcontracting are usually the two alternative mechanisms enabling the participation of SMEs in the procurement of public services awarded by a local authority. The first one is direct, whereas the second occurs when the winner is a large firm; the choice of a certain degree of subcontracting –either constrained by the local public authority or freely chosen by the firm –may, in such case, enable the SMEs to participate in the procurement.

A third way is the building of a hybrid organisation, such as either the Groupement d'Intérêt Economique (GEIE) in France or the Temporary Association of firms, (TAF, from now on), we are dealing with in the present paper. After being awarded the contract these temporary groups may evolve in a more stable organisation producing services in a cooperative way or remain an association of independent firms.

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The temporary groups of firms should enable the SMEs to overcome the usual scale limits of their direct participation in public procurement, because the proposed contract has not to be divided in small lots to allow bids less than the total required.

This is, however, true when the temporary association acts cooperatively, eventually evolving in a consortium after a successful bid, otherwise the efficiency results of the group disappear and the service could be better provided by awarding the whole contract to a large firm eventually constrained to subcontracting.

In this paper we first provide a theoretical framework of the relationship between hybrid organisations and public procurement. Then we present some empirical evidence on the efficiency in local public transport of a peculiar form of hybrid organisation, namely the TAF, broadly diffused in the procurement of local public services in Italy, and namely in the region of Piedmont. Differences emerge in comparing the efficiency scores of the firm holding the proxies of the other partners and the efficiency scores of the group. The proxy holder seems to be more efficient than the whole group.

2 Temporary Associations of Firms (TAF) in local public transport

Temporary associations of firms, formed for a period of time sufficient to carry out a specific activity, are created for the mutual benefit of two or more firms which desire to take part in a tender or to be awarded a contract for important public work. Only by collaborating can they guarantee that the whole work will be completed to everyone's satisfaction. The internal relationships shed within the group do not even form the conditions for it to be said that a partnership or a company has been created, as the statute excludes such a hypothesis.

The European Commission is aware of the risks of instability connected with the lack of a legal form so that Art. 4 of the Directive of the European Union 18/ 2004 reads: "groups of economic operators may submit tenders or put themselves forward as candidates. In order to submit a tender or a request to participate, these groups may not be required by the contracting entities to assume a specific legal form; however, the group selected may be required to do so when it has been awarded the contract, to the extent to which this change is necessary for the satisfactory performance of the contract."

This does not lead, then, to the compulsory creation of an autonomous legal entity which remains discretionary. By creating a temporary association, the partner firms, while remaining legally separate, can submit

a joint tender obliging each other to complete the work together. Such a tender is submitted by the *firm holding the partners' proxies* which assumes the role of representative and takes on the task of managing the relations within the group and with the contractor. It represents the group in all the activities for which the association has been formed, but ceases to represent the group when the activity is completed.

Relations between the members and the leader are often informal, based on collective trust, so that a temporary group of firms is without its own identity or legal autonomy, even though the associate firms offering to supply services together assume joint responsibility with regard to the contracting body.

As the group does not form an autonomous legal entity each member firm keeps its own autonomy regarding fiscal and social responsibilities. This is not an organization of merged firms but associate competitors who, vis à vis the tender, assume joint responsibility with regard to the administration, as well as to the subcontracting firms and the suppliers. There are no specific agreements, as in the case of subcontracting, or more stable grouping such as consortia (regulated by the Italian Civil Code Art. 2602).

Temporary associations can be horizontal, vertical or mixed. In the case of horizontal associations a relationship is established among firms carrying on a homogeneous activity: these firms join together so as to be able to provide the necessary requirements to take part in a tender. In the second case, vertical associations, the firm carrying out the main activity involved in the tender assumes the role of leader and coordinates the other firms.² In the third case, mixed temporary associations, both horizontal and vertical features are present.

Temporary groups of firms must not, however, be used to create restrictive agreements reducing competition. From an anti-trust point of view, in fact, a temporary association of firms, created in order to take part in a tender, is not different from a cooperation agreement among firms who find it advantageous to jointly supply a product or service on the market. This legal form should therefore be considered in the light of the usual antitrust criteria, taking into account the kind of competitive relations existing among the parties. It is worth noting that possible restraints on competition may be more severe in horizontal than in vertical temporary associations of firms, given that in the first case they are formed by direct or potential competitors willing to reduce supply.

The European Commission has stated in the 1968 Communication on cooperation between enterprises (OJC 75/3, July 29, 1968) that decisions and practices agreed between firms, which do not restrict competition, “should have the sole aim of creating a group to carry out a work together when the firms taking part are not competing with each other for the work to be done or they are not able to do the work alone.”

The creation and development of temporary contractual relationships among firms of various sizes, aimed at coordinating activities for the completion of a specific task, while the members remain autonomous and independent, are usually favourably considered by economists in the new institutional literature.

When looking at temporary groups of firms created in order to participate in a public tendering we are faced with a moving terrain, where definitions are not stabilized yet (Ménard, 2004), but usually refer to hybrid forms. These include a great array of agreements among legally autonomous entities doing business together, mutually adjusting, sharing and exchanging technologies as well as human and capital resources.

All hybrid forms, including temporary groups of firms, are consistent with the model developed by Williamson (1971) according to which hybrid organisations are neither markets nor hierarchies and have to be analyzed by their own specific characteristics.

Ménard (2004) highlights three main regularities that exist within hybrids.

First, hybrids include pooling of resources, making the system selective rather than open, leading to a need of cooperation and coordination through joint planning and information sharing.

Second, hybrids put in place more or less formal and complete contracts to settle relationships between members with reference to production, costs, risks profits and revenues sharing. These contracts are usually unknown to third parties because they are based upon trust between participating parties, in absence of formal procedures.

Third, parties remain competitors in fields outside the procurement contract.

On efficiency grounds an agreement to jointly operate is better than the alternative of subcontracting when there high uncertainty is present, making it difficult to put a value on the service (Barney and Ouchi, 1985). The group could be more efficient if based on a rule to share results allowing the joint use of resources and information among firms which are in a condition of mutual hostage.

However, a group may facilitate the allocation of resources but lead to a weaker incentive for effort, as compared with no integration. (G. Friebel and M Raith,2006). The reason being that benefits and costs of a stable organisation originate from the same problem: the integrated decision maker must obtain information about the possible use of resources from the single firms' managers, but each of them is biased towards its own profits, so that incentives to induce them to contribute to the collective result are hard to detect and put in place.

Relations between temporary partners in a group create a multiple agency issue, that is to say a situation where more than one party is in agency relationships with others - principals, agents or both - because this form of agreement involves a pooling of assets and a degree of joint management.

The following questions may arise. First, is efficiency improved within the hybrid organisation in comparison with single operating firms? If parties remain legally autonomous, how can efficiency be improved, or even measured, within the organization, in such a weak institutional environment? For instance, Gosh and Jones (1999) underline that two different kinds of opportunism may arise: one in which parties engage in shirking, that reduce their own costs regardless of its effects on total gain in the network, and the other in which parties engage in holding up behaviour, so imposing costs on their partners to force a more favourable share of the group's surplus.

Reducing these kinds of contractual hazards implies a very accurate selection of partners and conditions so as to efficiently reduce the presence of opportunistic behaviour. Such provisions are difficult to set because contracts remain incomplete, being too costly to establish fully binding rules, particularly when many different firms are involved in the organisation. It is, however, worth noting that contractual relationships in our case last for a long period of time, five years or more.

The second question stems from the fact that firms engage in hybrid organizations because they expect more surplus from their participation in groups as compared to acting alone. What is, then, the potential that determines the existence of such rents in our case? A single contract with the local authority for a whole transport basin, instead of many contracts for different routes included in the area, gives more bargaining power to the association enabling it to apply a uniform pricing policy within the area, whereas it is difficult to ascertain if prices charged by the group are really related to costs imposed by the system.

In fact, as it is well known, an agreement between firms, especially a horizontal agreement, serves usually to increase the firms' market power, except when it is a pure cooperation agreement, characterized by maximum coordination and absence of dominance. Just the opposite happens in the case study we present, because of the dominant role assumed by the proxy holder firm vis à vis the contractor, especially when the alliance concerns a large number of small firms and a much larger proxy holder.

3 Hybrid organisation and public procurement policy

The existing economies of scale in local public transport provision support the procurement for large basins, but in this case SMEs could be excluded from the procurement.

However it is usually argued that SMEs should be included in public procurement mostly because in many countries, such as Italy, they account for the majority of employment. This explains why it is a common policy, both at national and local level, to provide opportunities to small firms to participate in public sector procurement.

Three are the available ways: SMEs can directly contract with a public body (allotment), participate as a subcontractor to prime contractor (subcontracting) or associate in a group of firms, such as the GEIE in France and the TAF in Italy.

In the first case they can directly contract with a public authority, but in the case of local public transport this solution applies only if the area to be served is a small one, because only for single routes SMEs may efficiently compete.

In the second case they can participate as subcontractors to a large firm participating in a tender. In this case the participation of is technically possible because the winner divides the area to be served in small lots to be served by small firms.

In the third case the grouping of firms into different legal entities (consortia, GEIE, TAF) enables to directly have access to the large tender through the proxies' holder firm.

Either subcontracting or grouping exploit scale economies usually related to the transport activity and reduce transactions costs incurred by the public procurement entities when many lots have to be allowed.

The comparison between allotment and subcontracting procedures for the minimisation of the total cost of the contract and also for small business and large firms' profits has been addressed from a theoretical

view point in some interesting papers by F. Maréchal and P.H. Morand, (2002, 2003, 2004) considering the procurement of a fixed price contract awarded by means of a first-price sealed bid auction.¹

The split award auctions (Anton and Yao 1990, 1992) models and the dual sourcing models (Mc Guire and Riordan 1995) derive the conditions under which the single contract must be divided into many firms or allowed to a single firm when the lots are homogeneous. The total cost of the procurement could be influenced by the formation of a temporary group either positively, because scale economies lead to a total cost less than the sum of the individual ones, or negatively, because cooperation in the provision of local public transport service is a source of inefficiency.

We follow Morand in considering the group's cost as the simple sum of the costs of the partners firms and we compare the group costs with those of the proxies' holder (usually the largest firm within the group).

In comparing subcontracting and allotment we have a public buyer facing two different procedures: either the winning large firm is delegated to subcontract a given party of the contract or the procurement is divided in small lots (unbundling) so that small firms can directly compete for the award of some given part.

When a large firm is selected it has to bear a total cost which is equal to the sum of its own costs plus the negotiated costs of the chosen subcontractors, since its bid covers subcontractors' costs as well. The key competition element is the gap between its own cost and the total cost, including what is paid to the subcontractors.

In the subcontracting case, the payment received by small firms from the large winner depends on the relative bargaining power and, although information on costs is asymmetric, we can assume that the bargaining process results in the most efficient small firm being chosen. A better small bargainer reduces the mark up for the winner and conversely the large firm's profits are increased when subcontractors are poor bargainers.

Under Maréchal and Morand (2004) framework no bargaining process can perform better than an auction, which in a context of asymmetric information is the most powerful tool to extract rents. The small firm gets no informational rents when the large firm, contrary to the public buyer, knows its costs. Of course small firms are better off if neither the public buyer, nor the large firm do, as they can then get informational rents.

Consequently in a context of asymmetric information between contractor and subcontractors, small firms prefer to be subcontractors

¹ Further details on the division into lots and competition in procurements can be found in *Handbook of Procurement (2006)* edited by :Dimitri N., :Piga G. and and Spagnolo G., ch.7.

instead of participating in an auction. In the case of complete information on costs between large and small firms, the latter are better off with the allotment procedure, when they can get informational rents, because the public buyer does not know their costs.

The expected total costs differ only by the rents and under asymmetric information the allotment procedure performs better in reducing expected total costs. Under complete information rents vanish and the cost minimizing goal is better achieved by subcontracting.

A comparison between allotment and grouping of firms is thoroughly developed by Morand (2002) by modelling a public contract consisting of two lots to be awarded either to two small firms –each of them able to carry on the activity - or to a group of firms.

Under the hypothesis of cooperating firms, the group does not distinguish between its own cost and the cost of each member firm, so that its offer is based on the average cost of partner firms; provided no firm adopts a strategic behaviour, like cooperation (see Fornengo, Ottoz, 2007). In this case the group's offer for the whole contract is the sum of the cost functions of the partners, as in the case of a large bidding firm hierarchically organized in different subunits.

The difference in the legal nature of the two bidding entities (the large firm and the group) implies an asymmetric distribution function of the single costs in the two cases. According to the form of these distribution functions, the information rents of the large subcontracting firm may or may not be larger than the "collective" rent the auction implies for the group of firms, which, under asymmetric information, has little incentives to reveal its true costs (see also Gilbert and Riordan, 1995).

To summarize, according to the literature, under asymmetric costs information, allotment seems to be the less efficient procurement procedure in comparison either with a large subcontracting firm, able to extract information rents from the subcontractors, or with the group of cooperative firms, whose "collective" information rent could be less than the sum of each firm's rent.

4 Temporary groups in local public transport in Piedmont

We now deal with the case of temporary grouping present in the local public transit (LPT) sector in Piedmont. The choice is consistent with the

Italian regulatory framework,² which transferred the exclusive competences from the national state to the twenty regional authorities. Each of them is now responsible, in its territorial jurisdiction, for planning and policies relative to LPT.

The Region of Piedmont has delegated responsibility to local authorities, introducing wide-ranging decentralization for planning and assigning contracts for local transport services provision.

We deal with the procurement of intercity services, where transport contracts are made not with single firms, but with temporary groups of firms. Temporary groups were in fact created bringing together firms which previously were entitled to provide bus service on the different routes. Transport services are paid to the firm holding the partners' proxies, which then redistributes the revenues to the partners.

We built a data base using balance sheets and operating data referring to each regional bus transit firm. The data on temporary groups of firms have been elaborated on the basis of the information obtained from the administrative authority of Piedmont Region. Our dataset includes 58 LPT companies, 46 privately and 12 publicly owned mainly local municipal companies. They cover nearly 95% of the local bus transport supply at urban, intercity and mixed (both urban and intercity) level in Piedmont in 2004. Descriptive statistics referring to technical and economic efficiency have been built for both firms and groups.

16 are the firms' associations created in the area of Piedmont for intercity public local transport, whose dimension greatly varies as Table 1 shows. Five of them are made only of one firm, due to the mergers of participating firms, so that our analysis refers to the other 11 groups. At least two of them include over 18 firms, but most groups include only two or three firms. A similar variability is seen in the distribution of the firms in the different groups. In fact most firms are members of only one group, 13 firms participate in two groups, while the largest local public transport firm in Piedmont is present in 6 groups.

² issued from the LPT reform process started with Law 542/1997 and following legislative modifications still under way.

Table 1 Firms for each temporary group and groups to which each firm belongs (2004).

<i>Number of firms for each temporary group</i>	<i>Temporary groups</i>	<i>Number of groups to which each firm belongs</i>	<i>Number of firms</i>
1	5	1	38
2	1	2	13
3	3	3	3
5	2	4	1
7	1	5	2
11	2	6	1
18	1		
20	1		
	16 <i>groups</i>		58 <i>firms</i>

Source. Our database

Table 2. Descriptive statistics for the temporary groups of firms in Piedmont (2004)

<i>TEMPORARY GROUPS OF FIRMS (16)</i>	<i>FIRMS FOR EACH GROUP</i>	<i>EMPLOYEES</i>	<i>VEHICLE/KM</i>	<i>VEHICLES</i>
<i>Mean</i>	7	126	3.039.515	99
<i>Median</i>	3	93	2.818.000	64
<i>Standard Deviation</i>	8	124	3664.188	100

<i>Minimum</i>	<i>1</i>	<i>6</i>	<i>279.428</i>	<i>5</i>
<i>Maximum</i>	<i>18</i>	<i>469</i>	<i>13.630.735</i>	<i>383</i>

Source. Our database

Table 2 offers some descriptive statistics for the 16 temporary groups providing intercity transport for the year 2004. High variability is present: The median group includes 3 firms with 93 employees and 64 vehicles covering 2.818.000 vehicle/km. As above explained, there are 5 groups formed by just one firm and at the opposite one group formed by 20 firms.

The paper is focused on the evaluation of the efficiency effects of temporary groups and single firms. Is firms' efficiency enhanced by groups submitting tenders as compared to single firms? The comparison has to be made on the basis of technical and economic efficiency indicators- particularly average costs- of the group and the performances of the proxies' holder in each group, either publicly or privately owned, that could participate in the procurement procedure standing alone.

Table 3 Technical and economic efficiency indicators for intercity local public transport (2004)

	<i>Publicly owned companies(11)</i>	<i>Privately owned companies (58)</i>	<i>Groups(16)</i>
<i>Vehicle/km per employee</i>	29.900	33.000	30.419
<i>Vehicle/km per vehicle</i>	37900	40.118	38.604
<i>Employees per vehicles</i>	1,27	1,22	1,27
<i>Cost of labour per employee (Euro)</i>	36.167	34.766	35.437
<i>Share of labour cost over total cost 2002</i>	0,55	0,51	0,52
<i>Total cost per vehicle/km (Euro)</i>	2,18	2,06	2,11

Table 4 Technical efficiency indicators for the 11 intercity local public transport groups (2004). (In bold characters are the proxy holder's indicators)

<i>Groups</i>	<i>Number of firms per group</i>	<i>Employees per vehicle</i>	<i>Vehicle km per employee</i>	<i>Vehicle km per vehicle</i>
<i>Group 1</i>	5	1,09 (1.16)	42.055 (40.264)	45.978 (45.587)
<i>Group 2</i>	3	1,30 (1.16)	27.715 (40.264)	35.922 (45.587)
<i>Group 3</i>	2	1,23 (1.16)	33.011 (40.264)	40.595 (45.587)
<i>Group 4</i>	3	0,87 (1.16)	33.696 (40.264)	29.251 (45.587)
<i>Group 5</i>	11	1,29 (1.12)	33.625 (33.375)	43.214 (37.302)
<i>Group 6</i>	20	1,26 (1.45)	31.914 (30.186)	40.242 (43.867)
<i>Group 7</i>	7	1,20 (0.58)	30.433 (58.644)	36.402 (34.247)
<i>Group 8</i>	3	0,92 (1.16)	33.476 (30.685)	30.864 (35.655)
<i>Group 9</i>	18	1,23 (1.25)	29.039 (29.462)	35.597 (36.944)
<i>Group 10</i>	11	1,42 (1.55)	27.805 (28.696)	39.491 (44.355)
<i>Group 11</i>	5	1,52 (1.75)	24.765 (29.962)	37.752 (36.944)

The main explanation of the differences in technical efficiency indicators lies in the productivity of vehicles and employees utilized to provide local public transport service. Labour productivity, measured by vehicle km per employee per year, varies from 24.765 km per year for group 11 to 42.055 for group 1. Capital productivity, measured by vehicle

km per vehicle, varies from 29.251 km per year for group 4 to 45.978 for group 1. The ratio employees per vehicle ranges from .87 to 1.55.

Table 5 Economic efficiency indicators for the 11 intercity local public transport groups (2004) (In bold characters are the proxy holder indicators)

<i>Groups</i>	<i>Number of firms</i>	<i>Labour cost/total cost</i>	<i>Labour cost per employee</i>	<i>Total cost per vehicle km</i>
<i>Group 1</i>	5	48,7% (54%)	45.337 (41.984)	2,23 (1.93)
<i>Group 2</i>	3	54,2% (54%)	36.450 (41.984)	2,47 (1.93)
<i>Group 3</i>	2	53,1% (54%)	46.462 (41.984)	2,16 (1.93)
<i>Group 4</i>	3	51,6% (54%)	48.378 (41.984)	2,19 (1.93)
<i>Group 5</i>	11	47,5% (47%)	34.590 (29.100)	2,05 (1.80)
<i>Group 6</i>	20	51,8% (58%)	33.410 (31.500)	1,97 (1.81)
<i>Group 7</i>	7	44,1% (44%)	32.640 (46.620)	2,12 (1.81)
<i>Group 8</i>	3	49,2% (49%)	32.391 (31.250)	1,88 (2.09)
<i>Group 9</i>	18	54,4% (57%)	34.881 (36.050)	2,13 (2.14)
<i>Group 10</i>	11	56,9% (55%)	34.902 (33.460)	2,10 (2.13)
<i>Group 11</i>	5	53,4% (57%)	37.196 (36.050)	2,37 (2.19)

Table 5 presents economic efficiency indicators for the 11 groups we are considering. Labour cost over total cost ranges from 44.1% in group 7 to 56.9% in group 10. Labour cost per employee ranges from 32.391 euros per year in group 8, to 48.378 in group 4. The last indicator, total cost per

vehicle km, is an indicator of average cost ranging from 1.88 euros in group 8 to 2.47 in group 2.

The figures in bold characters show the corresponding indicators referred to the proxies' holder firm. The case of average cost is particularly interesting for getting some information relative to the reasons for which the group has been created. The leading firm always shows average costs lower than the group's caused by a higher productivity of either labour or capital, given that factor cost faced by partner firms are the same.

The proxy holder seems to be the most efficient firm in the group itself suggesting that the public body would be better off rewarding the whole contract to the proxies' holder. In the case of subcontracting the higher costs of the small firms might erode or not the leading firm's profits depending on their bargaining power and on the presence of scale economies.

Concluding remarks

Our results seem to confirm within the groups a rent seeking behaviour, oriented toward increasing above normal profit realized when the firms' network gets higher prices for the transport services it provides, or at least if it is awarded the contract offered by the local public authority or the renewal of it. The rent seeking behaviour of the partner firms taking place through the value creation of the hybrid organization brings to each firm higher profit than those obtainable by acting alone.

The cooperative perspective, emphasizing the development of collaborative advantages among firms pursuing convergent interests and deriving mutual benefits, seems to apply only in very few cases when interfirm relationships become a strategic asset and a source of competitive leadership in the public procurement.

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