

# Make or Buy Urban Public Transport Services: A Rational Choice?

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## Abstract

In this article, our aim is to study the determinants of the trade-off between in-house and outsourced utilities provision. More precisely, we focus on the French urban public transport sector. With regard to the issue we are interested in, this case is a particularly rich domain since, in France, the local authorities in charge of regulating the procurement of urban public transport services can choose between direct provision and outsourcing. In this latter case, they even have an additional option since they can contract out the operation of service either to semi-public companies or to fully private firms.

Using an original database covering 154 different French urban transport networks, we estimate the impact on organisational choices of network and service characteristics (size of the network, population density, level of demand uncertainty) and institutional dimensions (legal status of local regulators, percentage of other services already outsourced, political orientation).

Our results allow shedding light on the economic rationale behind the choice of a mode of governance. Indeed, although most of the interpretations of the organizational decisions made by local governments in utilities sectors concentrate on political factors, we show that there are rooms for economic explanations.

**JEL Codes:** H0, H7, L33.

**Keywords:** Public/private provision; Urban public transport.

# 1 Introduction

Since the seminal article by Coase [1937], a large body of the literature in industrial organization has tried to analyze the rationale behind the organizational choices made by firms. The so-called make-or-buy decision has been the subject of many theoretical developments and empirical works, especially in transaction cost economics and incomplete contract theory (Garrouste and Saussier [2005], Gibbons [2005]). The basic arguments are that the main drivers of vertical integration are the need to secure relationship-specific investments in a context of environmental uncertainty (Williamson [1985]) and the existence of verifiability problems (Grossman and Hart [1986], Hart and Moore [1988]). These propositions have originally been made to explain the behaviour of private firms operating in competitive markets. But, they can also be applied to the public sector, and more particularly to utilities. The make-or-buy decision then becomes a trade-off between in-house public provision (*via* a public bureau for instance) and delegation to a private operator (*via* a franchise agreement or a PPP contract). The two most common ways that governments can use to provide services are indeed in-house provision using salaried city employees and performance requirements contracts with private sector firms.

With the waves of regulatory reforms and privatization experienced in utilities industries since the 1980's, a huge number of theoretical developments have been made in an incomplete contracting perspective to explain the make-or-buy decision in the context of utilities (Grout [1997], Hart, Shleifer, and Vishny [1997], Besley and Ghatak [2001], Bennett and Iossa [2002], Hart [2003], Levin and Tadelis [2008]). In this account, the choice between public and private provision of services is dictated by efficiency considerations and depends on the level of contracting difficulties arising when it is hard to foresee and contract about the uncertain future. But although the question of when public or private provision of public services is optimal has been extensively dealt with theoretically, few empirical tests have been done so that the ratio empirical tests/models is very low. A first objective of the paper is to fill this gap by proposing a test of the determinants of organizational choices of local governments in the French urban public transport sector.

A second objective is to introduce institutional determinants as well as political economy considerations in the analysis. Indeed, the logic underlying the propositions derived from the theoretical literature mentioned above focuses on economic determinants. It is assumed that agents have a strong incentive to choose the most efficient mode of governance. Although this assumption is quite reasonable when we study actors operating in highly competitive markets, it can be seriously challenged,

however, in an analysis of the decisions made by local governments for utilities that are largely protected from competition. In these circumstances, it is likely that important factors other than economic efficiency, *e.g.*, support of key political constituencies, will play an important role. For example, local governments may choose a form that will allow them to influence local employment, a much easier task with a public bureau than with a private operator whose autonomy of decision is larger. Political orientation may also be a factor. A second objective of our paper is then to take into account such non-economic aspects. In the present French context, where several major cities have recently and sometimes suddenly decided to contract back in-house public services like water distribution (as in Paris or Grenoble) or urban transport services (as in Toulouse, Belfort or Douai), disentangling the economic motives from the political or institutional determinants of organizational choices is of particular interest.

To tackle these issues, we focus on the French urban public transport sector at the local (city) level. This case is a particularly rich domain since, in France, the local governments in charge of regulating the procurement of urban public transport services can choose between direct provision and outsourcing. In this latter case, they even have an additional option since they can contract out the operation of service either to a semi-public company or to a fully private firm. Furthermore, our study deals with organizational choices made at the level of city government, which is a useful level at which to study such decisions for several reasons. First, we are able to observe many cities making decisions about service provision in parallel. In this sense cities are a useful laboratory for making statistical comparisons. Second, cities differ in a variety of interesting aspects -by size, location, form of government and political orientation. At last, urban transport service provision at the city level is important from both economic and public policy standpoint as local government spending in the recent years equaled about 2 billion euros per year (Certu 2006).

These characteristics of the French local urban public transport sector thus allow us to answer the questions that are at the core of our study: what are the determinants of the organizational choices made by local governments to provide public services? Are their decisions mainly driven by economic efficiency considerations or by institutional and political constraints?

To address these issues, we use an original database covering 154 different French urban transport networks and we estimate, *via* a probit model, the impact of network and service characteristics (size of the network, population density, level of demand uncertainty) and institutional dimensions (legal status of local regulators, political

orientation, organizational choices of neighboring cities) on organizational choices. The results of our estimates indicate that local governments tend to choose in-house provision when the service is complex and contracting difficulties are expected. In that sense, local governments' decisions regarding the organization of public services provision are driven by efficiency considerations. But at the same time our results also indicate that political and institutional determinants play a major role in their decisions. Indeed although the political orientation of local governments does not appear as a significant determinant of organizational choices, variables such as the provision choices made by surrounding cities are significant determinants of organizational decisions.

The paper is organized as follows. Section 2 gives an overview of the French local urban public transport sector. Section 3 presents our theoretical background and the testable propositions we can derive. In section 4 we describe our data and variables. Section 5 provides the results of our estimations and section 6 offers concluding remarks.

## 2 Urban transport service provision: an overview

Since the 1982 law on the organization of transport within France, responsibility for urban public transportation in France is, as in most European countries, decentralized to the local governments (a city or a group of cities). This means that each local government has the responsibility to manage its own urban public transport system, by setting the characteristics of services to be procured (route structure, quality, fares, and ownership regime) and selecting a mode of organization for the provision of such services. As regard organizational choices, there are two methods to provide urban public transport services. Either the local authorities operate the service directly *via* a public bureau (“*régie*”) or it delegates the responsibility for providing the service to a transport operator within the framework of a contractual agreement. In the latter case, the operator can be a private or a semi-public company<sup>1</sup> (“*Sociétés d’Economie Mixte*” (SEM)).

It is to be noted that regulatory rules prevent the coexistence of several operators in the same urban network. In each urban area, public transport activities are therefore supplied by a single operator. Figure 1 below provides a snapshot of how urban public transport services are delivered: of the 156 cities in our sample, nearly 15% provide the service using only city employees, almost 17% use contracts with semi-public firms and 68% deliver the provision of the service to private firms *via*

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<sup>1</sup>In this case, the majority of the capital stock is under public control.

contracts. France is one among the rare European countries where private companies play such a role in the urban public transport sector<sup>2</sup>.

As in most European countries, the sector has been structurally generating losses and, thus, is subsidized. One of the main reasons for the budget being unbalanced relies on the fact that transport companies, either public or private, face various universal service obligations. Since 1969<sup>3</sup>, European Commission has indeed authorized member States to impose public service obligations, *i.e.* “*obligations which the transport undertaking in question, if it were considering its own commercial interests, would not assume or would not assume to the same extent or under the same conditions*” (art.2, par.1). These obligations encompass the tariff obligation, *i.e.* “*obligation imposed upon transport undertakings to apply, in particular for certain categories of passenger, for certain categories of goods, or on certain routes, rates fixed or approved by any public authority which are contrary to the commercial interests of the undertaking and which result from the imposition of, or refusal to modify, special tariff provisions*” (art.2, par.5). As a consequence, for 2006, revenues from fares were estimated to cover only 32% of the operating costs in average, which corresponds to an operating deficit of more than €2 billions. The main additional sources of financing can come from the budget of the local authorities ( €2026m in 2006), from selective state subsidies (€93m in 2006) or from a special tax collected by local authorities and paid by any local firm with more than nine workers (“*le versement transport*”) (€2422m in 2006).

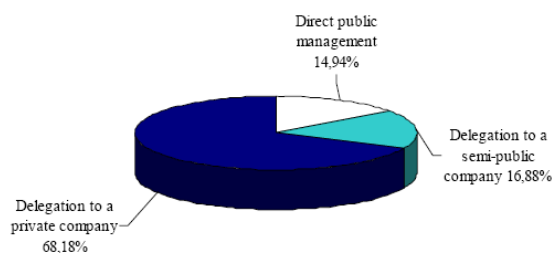


Figure 1: **Distribution of our sample’s networks according to the mode of organization prevailing in 2006** (Source: CERTU 2005 - 154 networks)

<sup>2</sup>The majority of the transport operators are members of the three largest groups dominating the market. In 2006, these three groups, namely Keolis, Transdev and Veolia Transport, controlled about 66% of all urban public transport systems (Source : GART [2007].

<sup>3</sup>Regulation (EEC) No 1191/69 of the Council of June, 26 1969 on action by Member States concerning the obligations inherent in the concept of a public service in transport by rail, road and inland waterway (OJ L 156, 28.6.1969, p. 1), as last amended by Regulation (EEC) No 1893/91 (OJ L 169, 29.6.1991, p. 1).

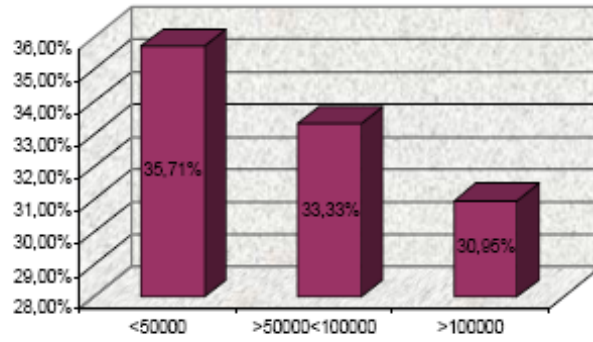


Figure 2: **Distribution of our sample’s networks according to the size of the population**

### 3 Contracting for services: theory

With the waves of regulatory reforms and privatization experienced in utilities industries since the 1980’s, a huge number of theoretical developments have been made in an incomplete contracting perspective to explain the make-or-buy decision in the context of utilities (Grout [1997], Hart, Shleifer, and Vishny [1997], Besley and Ghatak [2001], Bennett and Iossa [2002], Hart [2003], Levin and Tadelis [2008]). In this perspective, the trade-off between public and private provision of public services depends on the costs of contracting with an external provider.

Ignoring external contracting costs, that is the costs of writing, monitoring and adjusting delegation contracts, production would be organized and carried out more efficiently in a privatized firm than in a public firm for at least two main reasons. Firstly, because the objectives of a private firm are clearer and less diffuse and secondly because better incentives can be given to the managers and workers (Schmidt [1996], Hart, Shleifer, and Vishny [1997]). Moreover, as in the case of the French urban transport sector, private participation is often associated with *ex ante* competition since delegation contracts are short term contracts (seven years in average) awarded through a tendering process, while direct public administration is not subject to such competitive pressures. In theory, organizational choices are non binding so that direct public administrations could be challenged by other modes of organization and such competition could compensate the absence of competitive tendering as shown by Chong, Huet, and Saussier [2006] in a study of the water sector. However, in practice, there are very few cases of shift from direct public management to private or even semi-public operation in the French urban public transport sector. According to our own estimates, between 1995 and 2006, only two cities (Béziers in

1997 and Saint Malo in 2006) have experienced such a change, while reverse privatization, *i.e.* shifts from private operation to public administration, seems to be a little bit more frequent: it happened in five cities between 1995 and 2006 (La Rochelle in 1997, Le Puy in 2002, Douai in 2004, Toulouse in 2006 and Belfort in 2008). Hence one cannot reasonably consider that competition among the organizational modes exert a credible threat. In other words, competition issues reinforce the expectation that public service provision tends to be less efficient than private service provision. Such prediction is confirmed in the case of the French urban public transport sector by several empirical studies (Gagnepain and Ivaldi [2002], Roy and Yvrande-Billon [2007]).

However, accounting for contracting costs implies that outsourcing imposes additional costs that are not incurred if in-house provision is chosen. The optimal provision mode will then weigh the added contractual costs of using delegation contracts against the added benefits of the increased productive efficiency. In other words, in-house public production might be more efficient than outsourcing when the costs of managing contracting out and monitoring contractor compliance overwhelm savings that might otherwise accrue from contracting out. Hence the following central proposition:

*Proposition 1: Public authorities are less likely to outsource the provision of public services when external contracting difficulties increase, that is when it is harder to specify, enforce and adjust delegation contracts.*

In comparison with the number of studies dealing with the determinants of the make-or-buy decision inside a private firm, few empirical works have confronted this proposition to facts. However, the evidence they provide confirm that a key determinant in the make-or-buy decision of cities is contracting difficulties. For instance, Ménard and Saussier [2002] in a study of the water sector in France come to the conclusion that local governments tend to provide water services in-house when relationship-specific investments are at stake, that is when contracting with an external provider would incur risks of opportunism. In the same vein, Levin and Tadelis [2008] relying on a dataset of service provision choices by U.S. cities in a range of domains (*e.g.* public works, transportation, safety, health and human services) show that services for which it is harder to write and administer delegation contracts are less likely to be outsourced.

What this series of works highlights is the economic rationale behind the choices made by public authorities. In this account, outsourcing to private firms is dictated

by efficiency considerations. It is however likely that considerations other than economic efficiency, *e.g.*, support of key political constituencies, play an important role. For example, local governments may choose a form that will allow them to influence local employment, a much easier task with a public bureau than with a private operator whose autonomy of decision is protected by a contract. Political leanings may also be a determinant, as well as the form of governance of local governments which may influence the autonomy of decision at the local level (Lopez de Silanes, Shleifer, and Vishny [1997]). This view, advanced by Boycko, Shleifer, and Vishny [1996] among others, emphasizes the role played by political and institutional constraints in the service provision choices made by public authorities. This translates into a general proposition that we will refine when we will come to our specific case:

*Proposition 2: Institutional and political concerns play a role in the service provision decisions made by local authorities.*

A set of political economy predictions can be derived from this broad proposition which have lead to several empirical tests. One can mention Chong, Huet, and Saussier [2006] and Plunket, Huet, and Saussier [2008] who show that the organizational choices made by local authorities in the water sector are influenced by the decisions taken by the cities surrounding them. According to Gence-Creux [2001], inside a same city, provision choices regarding a particular utility also depend on choices made in the past for other public services. Another interesting result is obtained by Levin and Tadelis [2008] who find that cities run by an appointed manager rather than an elected mayor are more likely to contract for service provision. In the same vein, Estache, Guasch, Atsushi, and Trujillo [2008] show that decision makers, when confronted to the choice between various attribution mechanisms of public-private partnerships in the transport sector, pay particular attention to social considerations such as alleviation of unemployment.

## **4 Urban public transport service provision by French cities: our data**

To test our propositions we have used several sources to construct an original database. The main source of data is the annual survey conducted by the French Ministry of Transportation (*Enquête "Cahiers Verts"* 1995-2006) which provides a range of information on the organizational and technical characteristics of French urban transport systems at the local level. We have complemented this database with data on the cities's economic situation provided by the National Institute for Statis-

tics and Economic Studies. We have also collected from the Ministry of Environment information on the provision modes of other public services (water distribution and water sanitation). At last, data on the political orientation of city mayors come from the Ministry of Internal Affairs. In the end, our dataset covers 154 urban public transport networks (out of 210). The unit of observation is a local authority (a city or a group of cities) in 2006.

Our dependent variable ( $DELEG_i$ ) is the organizational mode of urban transport services in city  $i$  in 2006. This variable takes the value 1 if in 2006 the local government provided the service in-house; it takes the value 2 if in 2006 the urban public transport service was provided by a semi-public company; at last, it takes the value 3 if in 2006 the provision of the service was outsourced to a private firm. Our empirical strategy is therefore to estimate the following probit model:

$$DELEG_i = \alpha X_i + \beta Z_i + \epsilon_i \quad (1)$$

where  $X$  is a set of variables capturing the economic determinants of organizational choices (tests of proposition 1) and  $Z$  is a vector of institutional / political variables (tests of proposition 2). As we aim at explaining organizational decisions that prevailed in 2006 but were sometimes taken several years before, we chose to retain as a reference period for the vectors of variables  $X$  and  $Z$  the year preceding the expiration of the contract for those networks operated by external contractors (whether semi-public or private companies). As for the networks publicly managed, we took the last year at our disposal (2006) because we consider that this provision mode is challenged every year.

To test whether our predictions are corroborated in the French urban public transport sector, we need to relate our predictions to the data. As our propositions stress the importance of contracting difficulties and financial constraints on the one hand and institutional and political constraints on the other hand, we need to identify variables that impact on these aspects. The set of variables we introduce in the right-hand side are the following.

**Complexity and physical characteristics of the network.** Our first set of variables accounts for the complexity of the service performed by the operator. These variables proxy not only for the complexity of the service, but also for the level of (human) specific investments needed to operate the service, an important variable from an incomplete contract perspective. Our intuition is that city size may influence the ease with which local governments can contract with external providers.

The idea is that bigger cities will find it more difficult to write a contract specifying the performance of the service provider, to monitor it and to adapt it to changing circumstances. At the same time those cities are likely to have enough competencies to manage urban transport systems by their own. Hence we expect the probability of outsourcing to a private contractor to be lower for big cities. But the impact of city size on the probability to delegate is unlikely to be linear. Indeed, small cities are likely to attract few private operators as the potential profits do not justify investing resources in preparing and submitting bids, which suggests that those cities might be constrained to provide transport services directly (Prager [1994]). At the same time however, these cities might not have the necessary competencies to operate the service on their own. In other words, depending on the relative importance of the two types of constraints, the probability to delegate can decrease or be bell-shaped with the size of the city.

To disentangle between these two predictions, the variables we use are  $POPSIZE1_i$ ,  $POPSIZE2_i$ ,  $POPSIZE3_i$ . These are dummy variables that take the value 1 respectively when the number of inhabitants in the transport perimeter of the local authority is respectively less than 50,000, comprised between 50,000 and 100,000, and more than 100,000. These categories correspond to the traditional ones used in the sector. Official statistics indeed distinguish the various networks according to these thresholds. Figure 3 below reports the share of each category for the three organizational modes.

We also proxy the level of contracting difficulties with the variable  $NBCITIES_i$  which measures the number of cities covered by the local government  $i$ . Our intuition is that the more cities served by public transport in the area monitored by the local government  $i$ , the more complex the organisation of the competitive tendering process if delegation is the selected mode of organization. We also conjecture that the more cities in the area the more difficult the specification of the contract with an external provider. Hence our proposition is that  $NBCITIES_i$  might have a negative impact on the degree of delegation.

At last, the physical characteristic of the network we take into account is the length of the network in kilometres ( $SIZE_i$ ). The impact of this variable on the likelihood of outsourcing is expected to be negative. Indeed we conjecture that the longer the network the more numerous the contracting obligations, hence the lower the probability to delegate the provision of the service.

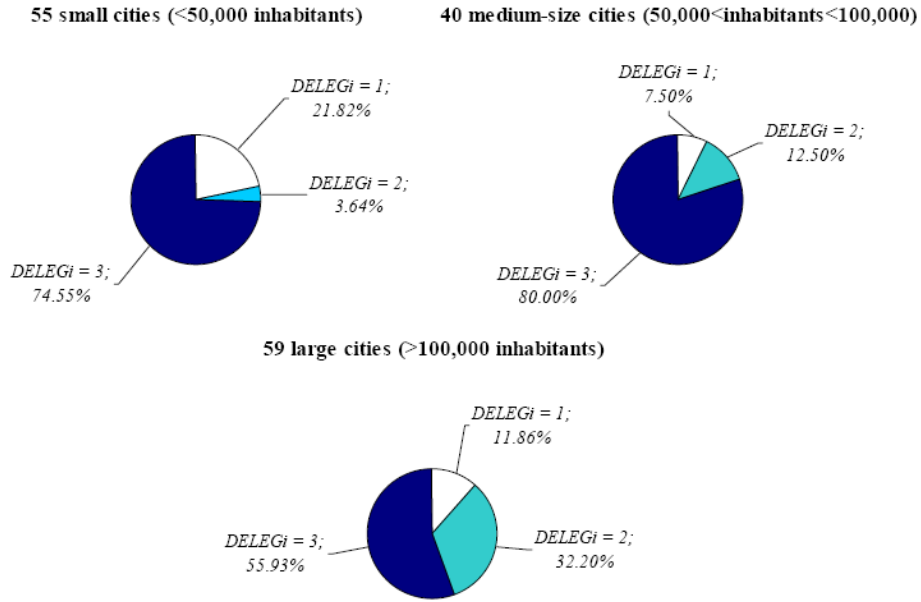


Figure 3: **Modes of organisation and size of the cities in 2006** (in % of the number of the networks)

**Uncertainty.** The level of contracting difficulties incurred when outsourcing is the chosen organizational mode is also likely to be correlated with the degree of uncertainty characterizing the provision of service because uncertainty impacts on contracting difficulties. For instance, the more uncertain the demand for transport, the higher the probability of contract renegotiation, hence the more costly the outsourcing solution and the more likely the probability to provide the service in-house.

To assess the impact of uncertainty on the degree of delegation, we include in the right-hand side a set of variables that capture the variance of hazards impacting on revenues and costs. A first variable ( $VTRIP_i$ ) is the volatility of annual demand measured as the standard deviation of journeys (passengers) between 1995 and the reference year<sup>4</sup>. In line with Caillaud and Quinet [1993], we expect that the more volatile the demand, the more integrated the organizational mode.

To take into account seasonal fluctuations of demand, we also incorporate a variable ( $TOURIST_i$ ) defined as the hotel capacity (number of hotel rooms) per inhabitant in city  $i$ . Our intuition is that, although more or less predictable, seasonal variations induce additional contracting costs as more services have to be defined in the

<sup>4</sup>As already mentioned, the reference year is the year preceding the expiration of the last contract for cities outsourcing service provision; for cities that operate the service via a direct public administration, the reference year is 2006.

contracts. Moreover, tourist cities may be more willing to control the quality of transport services as high quality contributes to their attractiveness. Hence we expect our proxy for seasonal variation of transport demand to have a negative impact on the probability to delegate the provision of services.

**Budget constraints and socio-economic circumstances.** Our last set of economic determinants of organizational modes captures the overall economic situation of cities.

First, consistently with the literature on privatization<sup>5</sup>, we expect cities' financial conditions to matter for their contracting decisions. More specifically, we expect local governments that have tight budgets to be more likely to outsource to private operators to save costs. To test this proposition we use the variable  $VT_i$  which corresponds to the average level of taxes dedicated to the financing of the transport sector<sup>6</sup> that city  $i$  collects each year, divided by the number of inhabitants. As indicated in section 2, the subsidies given to the transport sector come from this special tax and from the budget of the local authorities. Therefore an increase in the level of special taxes allows alleviating the level of funds allocated to the transport sector that comes from the city's budget and is associated with a reduction of the budget constraint. Hence  $VT_i$  is expected to impact negatively on the probability to delegate: the higher the level of special taxes dedicated to the transport sector paid by local firms, the less local authorities have to draw on their budget to finance the sector and the lower the probability of outsourcing.

Second, as shown by Estache, Guasch, Atsushi, and Trujillo [2008], socio-economic circumstances such as inequality and unemployment may play a role in the decisions taken by public authorities. One can for instance conjecture that in areas plagued by a high unemployment rate, local governments may be more prone to opt for direct public administration as this mode of organization allows them to influence local employment more easily than the delegated mode. To confront this prediction to data, we use two variables: the unemployment rate at the city level ( $UNEMPLOYMENT_i$ ) and the level of inequality as measured by the interdecile earnings ratio ( $INEQUALITY_i$ ).

**Political economy determinants of contracting.** The decision to contract out may also depend on political and institutional factors often ignored in classical IO

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<sup>5</sup>For a survey see for instance Megginson and Netter [2001].

<sup>6</sup>This special tax is called "*versement transport*" and is paid by any local firm with more than 9 workers.

models. Our analysis addresses these concerns by looking at various non economic factors such as political orientation or organizational choices made by surrounding cities.

To assess whether differences in political ideology impacts on organizational choices at the city level, we use a qualitative variable ( $POLITICS_i$ ) that takes values 1 if, at the reference year, the mayor of city  $i$  belonged to a right-wing orientated party and 0 if she belonged to a left-wing orientated political party. This variable is supposed to impact positively on the probability to outsource the provision of urban transport services as right-wing orientated decision makers are traditionally considered as more prone to privatization.

We also intend to assess the incidence of the organizational choices made by surrounding cities on the decision taken by a particular city. In accordance with some recent works in spatial economics (Chong, Huet, and Saussier [2006], Plunket, Huet, and Saussier [2008]), we expect local authorities to be influenced by their neighbours' choices. To test this proposition, we introduce a variable  $DELEGREG_i$  which measures the proportion of networks managed by private operators in the same region (city  $i$  excluded). We expect this variable to have a positive impact on the degree of delegation. The intuition behind this proposition is the following: to choose a mode of provision similar to the one selected by neighbouring cities can be a way to benefit from their capabilities as regards, for instance, the organization of competitive tendering if delegation is the selected mode, or as regards the management of a direct public administration. Figure 4 shows the geographical repartition of organizational modes in 2006. The darker the colour the less integrated the organizational mode. Thus, the white areas refer to local authorities that chose direct administration for their transport services. The dark blue areas refer to local authorities that delegate the provision of services. As this figure clearly indicates, some regions are very rich in public management (*e.g.* Provence-Alpes-Côte d'Azur, the South East region), whereas, in some others, delegated management predominates (*e.g.* Bourgogne, the Center region). This supports the intuition according to which the organisational choice made by a particular city is correlated with the choices made by its neighbours.

Similarly, one might expect the contracting experience of a city regarding other public services to impact on the mode of provision of urban transport services it selects. If, as argued by Gence-Creux [2001], Fraquelli, Piacenza, and Vannoni [2004] or Levin and Tadelis [2008], there is a potential for economies of scope in private sector contracting, then cities that have experienced outsourcing the provision of some services may be more likely to use the private sector for other services. To as-

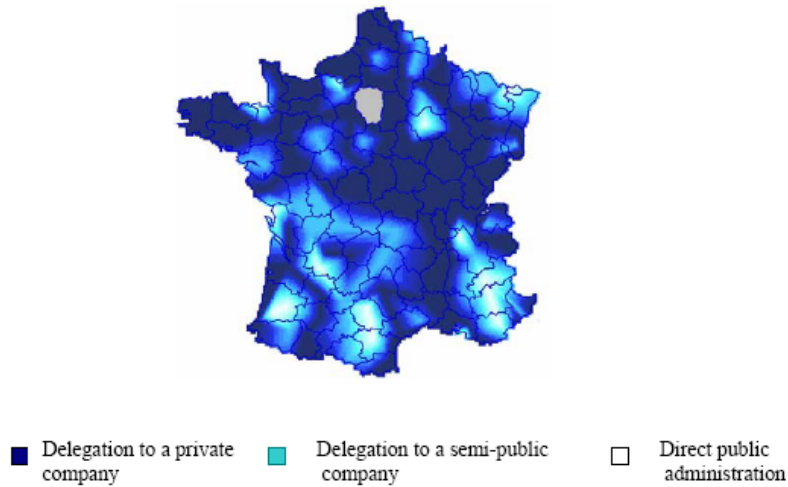


Figure 4: **Geographical repartition of organizational modes in 2006**

sess whether this kind of spillover is present, we incorporate in our model a variable  $DELEGWATER_i$  which takes the value 1 if, at the reference year, city  $i$  delegated the operation of water sanitation services and 0 otherwise and our conjecture is that  $DELEGWATER_i$  might impact positively on our dependent variable ( $DELEG_i$ ).

**Legal status of local authorities.** The various decentralization laws implemented in France since the 1970's have contributed to give local authorities more and more powers. To endorse their new and growing responsibilities, many municipalities have chosen to gather and jointly provide services. To go further in the analysis of the institutional determinants of organizational choices, we distinguish between the various types of inter-cities arrangements. Indeed, we know that some inter-cities arrangements (SIVU, Syndicats mixtes) are *ad hoc*, that is were created especially to ensure the operation of urban public transport services. On the other hand, other institutional arrangements (such as *communautés de communes* or *communautés d'agglomérations*) were originally created for other reasons than being able to finance and provide urban transport services and have therefore no specific competencies as regard transport. Hence we created a variable  $INTERCOMADHOC_i$  that takes the value 1 if, at the reference year, local government  $i$  was part of an inter-cities arrangement specifically designed to manage urban public transport service and 0 otherwise. We expect this variable to have a negative impact on the degree of delegation. The intuition behind this proposition is that local governments that are part of an inter-cities arrangement created specifically to coordinate urban public transport services are more likely to have a pro-active policy regarding

transport, hence to provide the service in-house.

Table 1 provides definitions of all variables used in the empirical model along with descriptive statistics.

Table 1: Checklist of our variables

Variable	Definition	Obs.	Mean	Std.	Min.	Max.
$DELEG_i$	Mode of organisation (1 if in-house, 2 if semi-public firm, 3 if private firm)	154	2.55	0.73	1	3
$NBCITIES_i$	Number of cities governed by the local authority $i$	154	13.77	15.09	1	86
$POPSIZE1_i$	Dummy taking the value 1 when the number inhabitants of the city $i$ is less than 50,000	154	0.34	0.48	0	1
$POPSIZE2_i$	Dummy taking the value 1 when the number inhabitants of the city $i$ is comprised between 50,000 and 100,000	154	0.27	0.45	0	1
$POPSIZE3_i$	Dummy taking the value 1 when the number inhabitants of the city $i$ is more than 100,000	154	0.39	0.48	0	1
$SIZE_i$	Length of the network $i$ in kilometres	154	203.93	2025.45	12	1207
$VTRIP_i$	Standard deviation of journeys between 1995 and the reference year	152	703.71	2336.88	1.11	24105.05
$TOURIST_i$	Number of hotel rooms per inhabitant	152	1246.92	1748.28	0	11664
$VT_i$	Average level of transport specific taxes per inhabitant	141	0.053	0.033	0.01	0.2
$UNEMPLOYMENT_i$	Unemployment rate $i$ (year 1999)	153	15.01	3.41	7.7	23.2
$INEQUALITY_i$	Interdecile earnings ratio	153	6.09	1.76	3.8	15.2
$DELEGREG_i$	Proportion of networks managed by private operators in the same region (city $i$ excluded)	153	0.58	0.22	0	0.89
$INTERCOMADHOC_i$	Dummy taking the value 1 when the inter-cities arrangement is <i>ad hoc</i>	154	0.26	0.44	0	1
$POLITICS_i$	Dummy taking the value 1 when the city $i$ is right-wing oriented	142	0.56	0.50	0	1
$DELEGWATER_i$	Dummy taking the value 1 when sanitation services were deleted at the reference year	150	0.64	0.48	0	1

## 5 Economic and political economy determinants of governance choices: results

Table 2 reports results of our estimations.

Table 2: Determinants of organizational choices<sup>7</sup>

	Probit	Probit	Probit	Probit	Probit	Probit	Probit	Probit	Probit	Probit
	DELEG(1)	DELEG(2)	DELEG(3)	DELEG(4)	DELEG(5)	DELEG(6)	DELEG(7)			
<i>NBCITIES</i>	-0.018*	-0.023**	-0.028***	-	-0.035***	-	-0.037***			
<i>POPSIZE1</i>	-0.414	-0.431	-	-	-	-	-			
<i>POPSIZE3</i>	-0.667**	-0.561*	-	-	-	-	-			
<i>SIZE</i>	0.001	0.002**	0.002*	-	0.002**	-	0.002**			
<i>VTRIP</i>	-	0.0001	-	-	-	-	-			
<i>VTRIP*POPSIZE1</i>	-	-	-0.004	-	-0.006**	-	-0.006**			
<i>VTRIP*POPSIZE3</i>	-	-	0.000	-	0.000**	-	0.0002*			
<i>TOURIST</i>	-	-0.0001	-0.0002**	-	-0.000**	-	-0.0002***			
<i>VT</i>	-	-	-	-5.622*	-12.175*	-	-11.83*			
<i>UNEMPLOYMENT</i>	-	-	-	0.074	-	-	-			
<i>INEQUALITY</i>	-	-	-	-0.168**	-0.206**	-	-0.106*			
<i>DELEGREG</i>	-	-	-	-	-	1.426***	1.532***			
<i>INTERCOMADHOC</i>	-	-	-	-	-	-0.016	-			
<i>POLITICS</i>	-	-	-	-	-	-0.111	-			
<i>DELEGWATER</i>	-	-	-	-	-	0.154	-			
<i>Log - L</i>	-123.71	-122.11	-121.41	-108.96	-98.53	-110.78	-95.95			
<i>LRχ<sup>2</sup>(K - 1)</i>	9.89	11.58	11.45	9.09	27.76	9.96	32.17			
<i>PseudoR<sup>2</sup></i>	0.038	0.045	0.045	0.040	0.123	0.043	0.144			
<i>Prob &gt; χ<sup>2</sup></i>	0.042	0.043	0.041	0.028	0.000	0.041	0.0001			
<i>N</i>	154	152	150	139	136	137	135			

<sup>7</sup>\* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

**Impact of complexity and physical characteristics of the network** Consistently with our predictions, city size appears as a significant determinant of the organizational choices made by local governments. Models 1 and 2 indicate that large cities (*i.e.* with more than 100,000 inhabitants) are less likely to outsource the provision of urban transport services than medium size cities (the omitted case) as the coefficient associated to the variable  $POPSIZE3_i$  is negative and significantly different from zero. The same result is obtained for  $POPSIZE1_i$  which coefficient is negative although statistically significant at the 15% level only. This suggests that the probability to delegate might be a bell-shaped function of the size of the city. Large cities might be reluctant to outsource for fear of incurring high contracting and renegotiation costs while small cities might be unable to attract private bidders although prone to delegate. We also find a significant negative correlation between the probability to outsource and  $NBCITIES_i$ . This is consistent with the view that local governments monitoring several cities might face more contracting difficulties if they decide to delegate the provision of the service. Hence the higher the number of cities served in the transport area, the lower the probability to delegate service provision. At last, our results indicate that the length of the network ( $SIZE_i$ ) impacts positively on the likelihood of contracting out, which does not confirm our proposition. A possible interpretation of this finding might be that the operation of extended networks requires sophisticated competencies as regards for instance timetabling and personnel management that private companies have but local authorities gathering many small cities do not. Indeed, since the promulgation of the decentralization laws, networks have kept on expanding and yet the competencies of local authorities have remained quasi unchanged. This could explain why the size of the city and the length of the network do not have the same impact on the likelihood of contracting out.

**Impact of uncertainty** Model 2 indicates that our proxy for demand uncertainty ( $VTRIP_i$ ) is not a significant determinant of organizational choices when taken as such. But, when crossed with the size of the city ( $VTRIP * POPSIZE1_i$ ,  $VTRIP * POPSIZE3_i$ ) as in models 3, 5 and 7, it appears as statistically significant. Results of our estimates indeed indicate that, in small cities, the bigger the yearly fluctuations of the demand for transport, the lower the probability to delegate the provision of the services, consistently with our proposition. Conversely, for large cities, there is a positive and statistically significant relationship between demand uncertainty and the use of outsourcing. This might be due to the fact that in presence of a high level of uncertainty, local governments of large cities might prefer to transfer commercial risks to private companies operating on several different networks and hence able to mutualize these risks. However, this interpretation has to

be qualified as delegation contracts do not necessarily imply the transfer of commercial risks on operators. Indeed, as reported by Roy and Yvrande-Billon [2007], in approximately 50% of the delegation contracts risks on revenues are borne by local authorities.

The variable  $TOURIST_i$ , which proxies for the seasonal fluctuations of demand, appears as a significant explanatory variable. In all models (except model 2) where it has been introduced this variable has a negative and significant impact on the probability to outsource, consistently with our conjecture. Thus, our results suggest that the higher the level of seasonal variation of demand, the lower the probability to delegate the provision of transport services.

**Impact of budget constraints and socio-economic circumstances.**  $VT_i$  impacts negatively on  $DELEG_i$ . This is consistent with our proposition that states a negative correlation between the level of taxes collected from local firms to finance the transport sector and the probability to delegate.

In the same vein, we obtain a negative and statistically significant relationship between the level of income inequalities and the likelihood to outsource, suggesting that local governments might use organizational choices in utilities industries as means to influence the economic situation of their area. This result is consistent with the observation made by Roy [2008] who highlights the high levels of wages in the French urban transport industry.

Our results however do not indicate that the rate of unemployment of a city affects the organizational choices made by its local government regarding urban transport. This is not so surprising as legislation does not give private operators a large room of leeway as regards their number of employees.

**Impact of political and institutional constraints.**  $POLITICS_i$  is not significant. This result suggests that despite increased ideological support for privatization at the state level, it is difficult to predict how this support will manifest itself at the local level of government where pragmatism is a guiding principle and decisions are likely to be based on cost and service quality concerns (Warner and Hebdon [2001]).

Consistently with our proposition and with results obtained in other studies (Plunket, Huet, and Saussier [2008]), the fact that neighboring cities outsource the provision of transport services ( $DELEGREG_i$ ) has a significant and positive impact on the choice to delegate. This result might not only reveal mimetic behaviors but

also rational decisions. Indeed, one can easily imagine that local governments that choose to delegate like their neighbors take this decision to benefit from their experience as regard for instance the organization of tenders or the monitoring of contracts.

The organizational choices made by local authorities for the provision of water sanitation services do not however seem to impact on their choices in the transport sector, as  $DELEGWATER_i$  is not statistically different from zero. This finding, which does not corroborate our prediction, is not so surprising. Indeed, firstly, the potential for economies of scope resulting from the joint operation by a private contractor of water and transport services may be very limited as only one company operates in both sectors in France (Veolia). Secondly, the argument that local authorities that experienced competitive tendering for their water services might benefit from this experience to reduce the costs associated with the organization of auctions in the transport sector is disputable because contracts in the water sector are often long term contracts. Hence, the administrative staff in charge of organizing competitive tendering for water in the past is likely to have been replaced at the time a bidding process is organized in the transport sector.

At last, the variable  $INTERCOMADHOC_i$ , that was introduced to capture the impact of the form of governance of local governments, is not a significant determinant of the likelihood of outsourcing.

## 6 Conclusions

Our objective in this paper was to explore a question that is central in industrial organization: what determines the choice of a specific mode of organization of public services provision? Although this issue has generated many theoretical developments especially in an incomplete contract perspective, few empirical studies have analyzed the trade-off among different governance modes in provision of public utilities. Additionally, to our knowledge, this issue has never been addressed for the urban public transport sector.

To explore what drives the decision to make or buy public services, we concentrated on the French local urban public transport sector and used a detailed set of data covering 154 cities. Our econometric results are very encouraging. Indeed in a sector in which most interpretations of the organizational decisions made by local governments rely heavily on political factors, we show that there are rooms for economic explanations. Our estimates clearly indicate that when deciding whether to provide the service in-house or to contract out local authorities take into account

economic efficiency considerations. More precisely, we provide evidence that cities where outsourcing is likely to induce high contracting costs (*e.g.* because the service is hard to specify or because demand is uncertain) tend to provide the service directly that is through a public bureau. Political considerations are however not absent from local governments' decisions. Our estimates indeed also reveal that the organizational modes chosen by neighbouring cities are key determinants of the decision to make or buy. However, this variable is the only one among the set of political economy factors that we introduced in our tests to have a significant impact on the organizational choices made at the city level, suggesting that decisions taken by local authorities are mainly driven by economic efficiency considerations; a good news for those who would doubt the rationality of local politicians.

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## Appendix A : Correlation matrix

	NBC.	P1	P2	P3	SZ.	VTRIP.	TOU.	VT.	U99	IN.	DEL.	INT.	POL.	DW.
<i>NBC.</i>	1.00													
<i>P1</i>	-0.35	1.00												
<i>P2</i>	-0.22	-0.40	1.00											
<i>P3</i>	0.52	-0.53	-0.57	1.00										
<i>SZ.</i>	0.74	-0.36	-0.28	0.58	1.00									
<i>VTRIP.</i>	0.44	-0.18	-0.17	0.32	0.58	1.00								
<i>TOU.</i>	0.44	-0.27	-0.27	0.50	0.72	0.66	1.00							
<i>VT.</i>	0.60	-0.35	-0.37	0.65	0.69	0.67	0.67	1.00						
<i>U99</i>	0.02	0.00	-0.16	0.15	0.09	-0.06	-0.06	-0.04	1.00					
<i>IN.</i>	0.04	0.01	-0.14	0.13	0.16	0.10	0.08	0.12	0.69	1.00				
<i>DEL.</i>	0.03	0.00	0.02	-0.02	0.03	0.04	-0.06	-0.05	0.15	0.02	1.00			
<i>INT.</i>	0.24	-0.03	-0.10	0.12	0.20	0.15	0.17	0.20	0.03	-0.00	-0.00	1.00		
<i>POL.</i>	-0.08	0.15	-0.03	-0.10	-0.05	-0.15	-0.03	-0.15	0.00	0.12	-0.06	-0.06	-0.06	1.00
<i>DW.</i>	-0.03	-0.01	-0.05	0.05	0.04	0.10	0.13	0.11	0.08	0.03	0.01	-0.01	0.06	1.00