INRA SCIENCES SOCIALES

N° 5/2010 –APRIL 2011

RESEARCH IN ECONOMICS AND RURAL SOCIOLOGY

Local taxation issues in France: rural authorities caught between tax interactions and agglomeration economies

Taxation disparities among local authorities have long been explained solely by the specific features of each of the authorities. However, one must consider that the local authorities' tax choices are also driven by the competitive or cooperative relationships they develop. Basing ourselves on an analysis of the taxation adopted by "groups of municipalities" with single business tax ("SBT"), we show that in France there are tax interactions between groups of municipalities. The authority's choice of tax rate is affected by that of its neighbouring authorities. Moreover, urban areas benefit from a taxable agglomeration rent. The firms based in towns agree to bear a higher tax cost, as long as this cost is offset by the benefits of agglomeration linked to the concentration of private businesses. Therefore, in fiscal terms, urban and rural authorities do not have the same room for manoeuvre. Rural authorities cannot increase their tax rate without seeing their tax base flee.

Local taxation: mechanisms and issues for French rural areas

At a time of major local taxation reform and, in particular, the abolition of business tax, there are grounds for an analysis of the links between French local authorities and their local taxation, and the links between that taxation, the utilities it provides and the economic activity that develops in these regions. France is one of the European countries where the share of taxation in local authority revenues is the largest (about 50% of all their revenues). Local authorities receive direct and indirect tax revenues. Direct taxation which represents 85% of local taxation is mainly made up of four local taxes; "residential tax", "property tax", "land tax" and "business tax" (see Frame 1). At the time when the 2010 finance law reform implemented the reform of local taxation (law of December 30th 2009, n° 2009-1673), business tax accounted for approximately 45% of local taxation revenue.

One of the specificities of the French local public sector is the way various tax layers are stacked on top of each other. Municipalities, departments and regions independently vote in the rates of the four direct local taxes which are applied to the same tax bases. A fourth level may be added to these three local levels: groups of municipalities. As regards direct taxation, the groups of municipalities may opt for three different tax systems: additional taxation, SBT and mixed taxation. The groups of municipalities with the additional tax system implement a taxation rate, in addition to the municipality rate, on each of the four taxes. If they select the SBT, the groups of municipalities are the only ones to collect the whole amount of the business tax in the territory. Until 1999, the groups of municipalities with SBT could collect neither residential tax nor land or property tax. Since the law of July 12, 1999, all the structures with SBT may, under supervision, exert a tax pressure on the other taxes: this is what is called mixed taxation. Therefore, groups of municipalities with SBT may collect an additional tax on land, property and residential taxes.

These characteristics of the local tax system have several consequences in terms of local communities' strategy in determining their

taxation rate. The French local authority system with its 36,565 municipalities tends lead to competition between this large number of communities, which are highly diversified in their economic and social characteristics. In theory, communities are in competition as regards taxation in order to attract firms, so they have a tendency to set lower taxation rates. These rates are often suboptimal in terms of tax return, that is, they result in a cut in the supply of local public goods. Local communities would rather finance a higher quantity of local public goods through their local taxation. This downward trend in tax pressure, interesting in terms of attractiveness to firms but detrimental to the provision of local utilities, is all the greater when the communities in competition are many. From this point of view, the development of inter-municipalities must limit the tax competition intensity by reducing the number of base communities.

New Economic geography approaches address the mechanisms and consequences of geographic concentration on economic activities and populations. Firms concentrate in towns in order to be closer to their suppliers, clients, and workforce and to the information they need. In such conditions, the race for lower local taxes is not systematic. The advantages of the conurbation make firms much less sensitive to local taxation in their choice of location and relax the tax competition game to which urban authorities are subjected. These benefit from a taxable agglomeration rent. They may apply a high tax rate without risking the loss of their tax base and the businesses which bear it. These businesses would rather benefit from the agglomeration economies existing in the urban environment, even if this means paying higher taxes, until this cost becomes higher than the gains of agglomeration.

We may therefore assume that in France there is strong tax competition, in particular as regards business taxation, the only tax specific to firms. However, this tax competition does not concern the rural and urban authorities in the same way. In the rural authorities, firms are more sensitive to local taxation differential whereas in the urban environment, this pressure is compensated by the agglomeration gains that the firms get elsewhere.

Frame 1: French local tax system

There are 4 direct local taxes:

Residential tax is paid by the occupant of a building dedicated to residence, main or second homes and whatever the status: owner or tenant.

Real estate taxes (property and land taxes) are paid by the building or land owners, whatever the use (residential or professional).

Real estate and residential tax bases are assessed from the land register rental values. These taxes known as household taxes are fixed by municipalities, regions and departments. However, regions have not set any residential tax since 2002.

Business tax is due by natural persons and corporations regularly practising a professional non salaried activity. The gross business tax base is made up of three components: the land register value of the premises liable for a property tax, the rental value of the moveables, and 6% of the income of the professions with less than 5 employees.

Business tax is collected by regions, departments and municipalities, each of them applying a rate. It is also collected by groups of municipalities, when such municipality belongs to an inter-municipality.

Business tax: growth and spatial disparities

From 1993 to 2006, the rates of the four local direct taxes - assessed as the ratio between the sums of the collected product at municipal and inter municipal level and the tax base - all showed an upward trend ranging from 2.1 points for business tax to 6.3 points for land tax (table 1).

Table 1: Average growth of the four direct local tax rates (municipalities and groups of municipalities) in France between 1993 and 2006

	1993	1999	2006	1993-2006 deviation
	(in %)			(in % points)
Residential tax rate	12.1	13.4	14.3	2.2
Property tax rate	15.2	17.0	18.3	3.1
Land tax rate	37.6	40.2	43.9	6.1
Business tax rate	13.2	14.2	15.3	2.1

How to read it: in 1993, the local residential tax rate (municipal and inter-municipal) was of 12.1% of the inhabited building rental value; In 2006 this rate went up to 14.3% that is to say an increase of 2.2 points. Source: Minefi

The business tax rate implemented by the local level (municipal and inter-municipal), 15.3% on average, seems to be higher when the municipality belongs to a group of municipalities with SBT, 16.3%, and still higher if the municipality belongs to a group of municipalities with a mixed taxation system, 17.1% (table 2). This somewhat surprising observation in that the choice of a mixed tax does not allow the replacement of an increase in other taxes by the SBT, may be explained in various ways.[1]

In order to identify the respective roles of the tax interactions and economies of agglomeration in the rate-setting by this authority, we focus on one type of inter-municipalities, here the groups of municipalities with SBT. The number of groups of municipalities, their composition and their tax system may change with time.

Because of these changes, it is better to carry out a cross-section analysis in order to be able to compare the groups of municipalities with each other. The analysis is therefore about the groups of municipalities with SBT observed in 2002.

These inter-municipalities are distributed between urban and rural areas, using the divisions proposed by INSEE (French National Institute for Statistics and Economic Studies) from the French 1999 census. In metropolitan France, in 2002, 354 groups of municipalities contained an urban hub, that is to say an urban unit including at least 5,000 jobs, whereas 525 groups of municipalities were organized around a rural hub (that is to say a municipality or an urban hub comprising between 1,500 and 4,999 jobs. As the choice of a tax system with SBT is more frequent in cities than in the countryside, groups of municipalities with SBT were ultimately distributed into 354 groups of municipalities with SBT centred on urban hubs and 129 centred on rural hubs. The map plotting these inter-municipal communities reveals that, although it is more urban, the SBT choice is more widespread in western France, where cooperation is historically more common.

Table 2: Business tax rate (municipalities and groups) according to the tax regime of the inter-municipality in 2006

Average rate across all the municipalities	15.3
Excluding groups	13.8
Additional taxation	12.7
SBT	16.3
Mixed tax	17.1

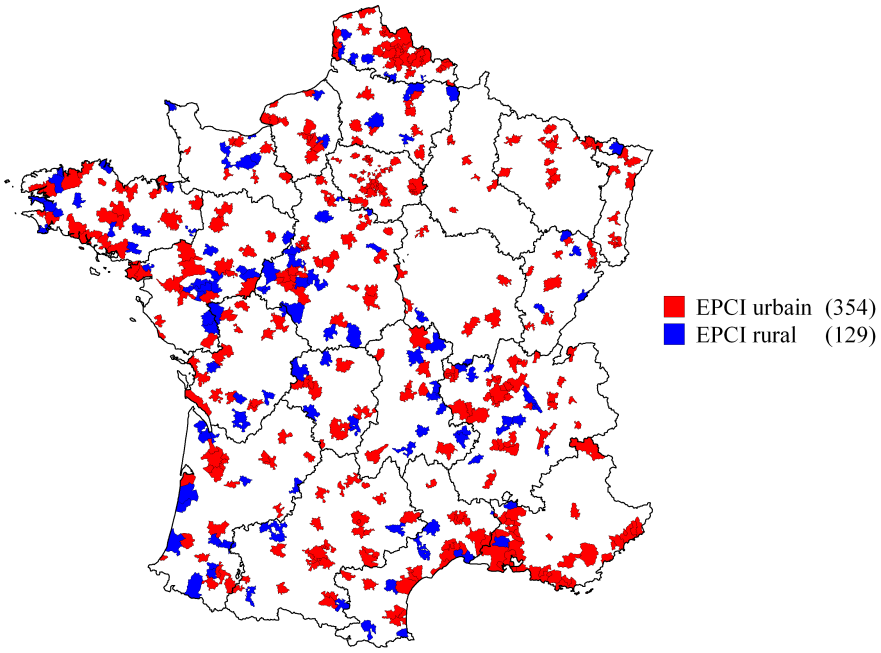
Source: Minefi

Local taxation, less room for manoeuvre for rural authorities

We have looked at the existence and size of the potential tax interactions between groups of municipalities with SBT depending on whether they are urban or rural and have analysed the effects of economies of agglomeration. The methodology uses spatial econometrics tools to study the role of the level reached by a variable in the surrounding area on the level of that same variable in the area considered (see frame 2). The assumption of tax interactions means that the authority's choice of SBT influences the surrounding authorities' choices. To assess this type of interaction between authorities of the

[1] It may be a complementarity between the supply of communal public goods and the supply of inter-communal public goods, or effects of skill transfer from the municipalities to the groups of municipalities, tending to level the quality of services upwards. Finally, the overall operating allocation granted to groups of municipalities is an increasing function of the fiscal integration coefficient, a link between tax revenues and tax ratio retained at community level (after repayment to municipalities of their share) and the total tax levied on land (community and municipalities). Under these conditions, groups have an incentive to increase their own taxes to raise the amount of the overall operating allocation that they collect. This lever would be all the more tempting in the case of groups of municipalities with SBT and even more so of groups of municipalities with mixed taxation.

same level, it furthermore appears necessary to check the tax interactions caused by both other levels, region and department, sharing the same tax base.



Urban and Rural groups of municipalities with SBT in 2002

Our estimate results give a tax interaction coefficient between groups of municipalities significantly positive, robust to changes in the model[2] specifications and around 0.85. That means that a 10% change in the average business tax rates of the neighbouring authorities leads to an 8.5% increase in the tax rate of the authority considered. Vertical tax interactions among the observed groups of municipalities and the departments in which they are located are equally strong. As the coefficient is positive, it shows a complementarity between the inter-municipalities and their department, in terms of the tax burden on firms. Moreover, tax competition does not appear to be stronger when the agglomeration is larger, whether measured by population density or concentration of activities and, in particular, by the number of agglomerated jobs (table 3, columns 2 and 3).

On the other hand, the coefficient between business tax rate and private capital stock is positive and significant in the urban groups of municipalities while this coefficient is not significant in the rural groups of municipalities. This result confirms the existence of a taxable agglomeration rent in towns. In big cities, the tax base, measured by the private capital stock, tends to increase and not decrease with the tax rate. So in towns, firms are prepared to accept higher fiscal pressure as long as it is offset by the advantages of agglomeration of economic activities. Urban and rural authorities are not in comparable situations of attractiveness when the aim is to attract firms by playing on a local tax reduction.

These results raise questions about the effects of the abolition of business tax. We may assume that tax competition behaviours will tend to be transferred to local tax rates covering households, sources of direct taxation which remain in the hands of local authorities. As the determinants of choice of location are not the same for households, the local authorities' room for manoeuvre will depend on other local characteristics, such as attractiveness in terms of residential location.

[2] Columns 1 to 3 of table 3 show the comparison of the estimate results when the set of variables used changes.

Frame 2: Methodology for estimating tax interactions and economies of agglomeration effects

The horizontal tax interactions are assessed via a spatial auto-regression model. We consider an equation where the tax rate set by groups of municipalities is a function of the average weighed rate of the neighbouring authorities.

To assess the role of agglomeration economies, and more particularly the existence of a taxable agglomeration rent, a dummy variable is introduced taking the value of 1 if the groups of municipalities observed belongs to an urban hub (and 0 otherwise), as well as an interaction term between this dummy variable and the private capital stock. The latter is a measure of the tax base to which business tax refers.
Last, to test the theoretical assumption whereby tax competition is harder when concentration increases, two types of agglomeration characterisation measures are introduced: the population density of the groups of municipalities and Balassa's employment concentration index.

The following equation is tested:

$$t_i = \gamma + \gamma_u U_i + \rho \sum_{j \neq i} w_{ij} t_j + \rho_u \sum_{j \neq i} w_{ij} t_j \times Agglo_i + \alpha T_i + \beta \tau_i + \delta K_i + \delta_u K_i \times U_i + \phi X_i + \varepsilon_i$$

t_i is the business tax rate chosen by the groups of municipalities i. T_i is the business tax rate set by the Department of groups of municipalities. So, ρ and α respectively measure the magnitude of the horizontal and vertical tax interactions. τ_i is the average residential tax implemented in the groups of municipalities i. X_i is the unemployment rate, a variable measuring the groups of municipalities' expenditure needs. This variable shows the local level of poverty and is pertinent here because the groups of municipalities bear social expenses. $Agglo_i$ is the measure of agglomeration economies, that is to say the population density or the Balassa agglomeration index, observed in authority i. So ρ_u measures the tax interactions according to the level of agglomeration.

The Balassa agglomeration index is measured as follows: $BA_i = \lambda_i^E / \lambda_i^S$ where λ_i^E is the share of employment located in authority i and λ_i^S is the share of the surface area that the authority represents in all the authorities observed.

To carry out this estimate, it is necessary to consider various statistical problems. First, it is necessary to choose the interaction matrix between groups of municipalities, that is, the respective weight of the behaviour of neighbouring authorities w_{ij}. As is often the case, it is a weight corresponding to the reverse of the distance between the two authorities concerned. We therefore assign a greater weight to the tax choices of the closest authorities geographically.

Potential endogeneity of both the explanatory variables and the tax rates voted in by the groups of municipalities in competition is the main problem to address in the estimation strategy. The tax rate set by an authority is influenced by the other authorities' tax rates, and, at the same time, the tax rates set by the other authorities are also a function of that of the authority observed. So we assess ρ using the instrumental variables method. This method has the advantage of ensuring that the correlation between tax rates is not due to a common exogenous shock.

Table 3: estimate results with the SBT rate as a dependant variable

	(1)	(2)	(3)
local business tax of neighbouring municipalities (ρ)	**0.802***	**0.869***	**0.827***
neighbouring business tax rates weighted by population density (ρ_u)	-	**-0.004**	**-**
neighbouring business tax rate weighted by Balassa concentration (ρ_u)	-	-	**-0.004**
departmental business tax rate (α)	**0.420****	0.287**	0.287**
Residential tax rate (β)	**0.174**	**0.092**	**0.087**
Unemployment rate (ϕ)	0.078	0.117**	0.116**
Capital stock (δ)	-0.016	-0.026	-0.022
Capital stock in urban groups of municipalities(δ_u)	0.096**	0.114**	0.1137**
Dummy variable in urban groups of municipalities(γ_u)	-1.104*	-1.321**	-1.313**
Constant (γ)	-0.919	-0.531	-0.520
Adj. R^2	0.425	0.386	0.386
Observations	483	483	483

Note: All the variables are transformed into log. *: significant at 5%, **: significant at 1%. The variables considered as endogenous are in bold.

Sylvie Charlot (corresponding author), INRA - Université Pierre Mendes-France UMR GAEL, Grenoble
Sylvie.Charlot@grenoble.inra.fr
Sonia Paty, Université de Caen and EQUIPPE, Lille
sonia.paty@univ-lille1.fr
Virginie Piguet, INRA, UMR1041 CESAER, Dijon
virginie.piguet@dijon.inra.fr

For further information

Charlot S., Paty S. 2010, The French local tax setting: do interactions and agglomeration forces matter? *Urban Studies*, 47(5), 1099-1116.
Charlot S., Paty S., Piguet V. 2008, Intercommunalité et fiscalité directe locale, *Economie et Statistique*, 415-416, 121-140.
Charlot S., Paty S. 2007, Market Access effect and local tax setting: evidence from a French panel data. *Journal of Economic Geography*, 7(3), 247-263.

Published by the INRA Department of Social Sciences, Agriculture and Food, Rural Development and Environment
Publishing unit: Editorial Director: Bertrand Schmitt– Editor: Sophie Drogué (Chief Editor),
Translation and composition: Ariel Gille