

EMPIRICAL EVIDENCE ON TAX INFORMATION SHARING AMONG
SUB-CENTRAL ADMINISTRATIONS

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ABSTRACT

The literature on horizontal tax interdependencies offered limited attention to the interactions on administrative policies although they play an important role in determining the total tax revenues collected. The incentive for sub-central tax authorities to share relevant taxpayer-specific information has been accounted for in the literature on international capital mobility as part of a strategic behavior that trades off cooperation benefits versus competitive gains. In this paper we investigate these issues in a decentralized context with the aim to analyze the determinants of voluntary information sharing between regional tax administrations in Spain. We obtain results that are congruent with standard theory and in particular we find that some specific variables play an important role in determining the willingness of regional tax authorities to share taxpayer-specific information. In particular the presence of reciprocity between two regional administrations and their political alignment are associated with a higher number of tax information shared between them.

Keywords: tax information sharing, reciprocity, fiscal federalism
JEL Classification: H71, H77, H83

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1. Introduction

Tax administration policies are crucial in affecting the total revenues collected by tax authorities. Then investigating the determinants of these policies is a central issue. Such questions are of particular importance both within international frameworks and federal countries where the mobility of tax bases can make the tax administration dependent on the interaction and mutual influence established between countries or sub-central institutions. However, the literature on horizontal tax interdependencies offers limited attention to such matters and particularly, and possibly for this reason, there is no agreement on the optimal institutional form – centralized or decentralized – that tax administration should take in a federal context.

In general, the literature that analyses these issues has identified two main sources of interdependence. On the one hand, Cremer & Gahvari (2000)¹, examining the implications of tax evasion for fiscal competition and tax harmonization policies in an economic union, prove the possibility of mobility-based competition in tax enforcement policies. They obtained sub-optimal equilibrium values for both tax and audit rates and stressed that tax harmonization alone is not sufficient to avoid the inefficient audit rate outcome. Durán-Cabré *et al.* (2012) have empirically tested this result for the Spanish federal framework and corroborate mobility-based competition in tax enforcement among regional administrations.

On the other hand, the incentive for sub-central tax authorities to share taxpayer-specific information has also been accounted for in the literature as part of a strategic behaviour that seeks a trade-off between cooperation and competition. In particular, studies have focused on the incentives for tax cooperation between states to reduce evasion in an international mobile-capital framework (see Keen & Ligthart, 2006a, for a survey). Indeed, technological developments and the removal of capital controls have greatly facilitated international capital tax evasion and it seems that the exchange of information might play an important role in dealing with these issues.

In this perspective, the seminal study by Bacchetta & Espinosa (1995) focuses on an international mobile-capital framework and sets up a two-stage game: in the first stage countries commit to information sharing and in the second stage they set tax rates. The authors show that when non-residents' investments are subject to the domestic tax rate (*i.e.* tax authorities cannot discriminate between residents and non-residents in tax setting), tax administrations have the strategic incentive to share information with their foreign partners. Indeed, by so doing one government might induce a partner to set a higher tax rate in the second stage: knowledge of the information provision makes the first country less attractive for foreign investments (*i.e.* for international tax concealment). Then the strategic trade off is between competitive behaviour – lowering the tax rate to increase foreign investment – and cooperative behaviour – voluntarily sharing information to

¹ See also Janeba & Peters, 1999 and, Stöwhase & Traxler, 2005.

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reduce international tax evasion. In equilibrium, the second effect may dominate the former with the result of partial information provision.

In a more recent study, Bacchetta & Espinosa (2000) further their analysis of these questions by modelling the choice of tax rates and information provision as an infinitely repeated game and identify the incentives to cooperate and the conditions under which information sharing is optimal. A contribution in this same line is provided by Huizinga & Nielsen (2002) who model a repeated game in which tax authorities choose between withholding taxes and sharing information as alternatives for dealing with international capital income and profit taxation.

These contributions generated further theoretical studies of these questions (*e.g.* Tanzi & Zee, 2001; Keen and Ligthart, 2006b). To the best of our knowledge, the only empirical paper that tests these models is Ligthart and Voget (2010).

Investigating these questions by conducting an empirical analysis of a federal/decentralized context will undoubtedly represent a novelty in the literature and will also contribute to shed more light on the alternative designs (centralized vs. decentralized) for tax administration within a federal state. We aim to analyse the determinants of voluntary information sharing between regional administrations based on a study of the Spanish case. Spain is a good field for conducting empirical research. The Spanish regions (known as “Comunidades Autónomas”, henceforth CAs) have had the power to administer several wealth taxes since the mid-eighties and following reforms in 1997 and 2002 they also acquired the legislative power to modify significant tax parameters. Interestingly, the 1997 reform introduced official forums at which central and regional tax administrations might interact as well as the possibility of informal meetings being held between regional tax authorities. As such, Spain can serve as a benchmark for evaluating the information-sharing process in a decentralized framework and, more generally, for determining the optimality of a decentralized tax administration scheme.

In order to fulfil these objectives, we will study decentralized wealth taxes while focusing on a specific area of potential cooperation between the CAs. We refer to the application of the principles that indicate how tax revenues should be distributed among the CAs (the so-called “puntos de conexión” in Spanish). These rules are based on either the residence or the territorial source principles, depending on the taxable event, and regarding which taxpayers may be unaware. As a result, errors may appear when reporting tax returns: a taxpayer might pay the tax to a CA in which the revenue was not in fact produced according to the corresponding principle. Furthermore, following the devolution of normative tax powers to the regional level, a taxpayer might also behave strategically and present his or her tax return in a CA with relatively low fiscal pressure in order to evade payments. For this reason, each CA should share its information on misreported taxes and return all revenues to the competent CA. This practice is supposed to be applied as a

rule, but it is not always necessarily the case. Indeed, there is anecdotal evidence that seems to confirm that the information sharing process between CAs is far from automatic.² Indeed each CA needs to consider the trade-off between the incentive to retain misreported tax revenues and the incentive to obtain the transfer of tax revenues to which it is entitled. Moreover, following fiscal reform, a CA might have behaved strategically, giving out signals of low tax pressure via statutory tax rate cuts, so as to induce, to a certain measure, taxpayers to err in their tax returns with the aim of obtaining increased tax revenues. Therefore, our empirical framework reflects existing theoretical models when we examine the period immediately following decentralization. In the period prior to reform, the behaviour of the CAs can, it would seem, be examined by applying the prisoners' dilemma. This opens up the possibility of developing a theoretical model that incorporates the features of both periods so as to provide a better description of the CAs' behaviour.

Therefore, we wish to study the determinants of the CAs' willingness to engage in this information-sharing process.

2. Methodology

The theoretical literature provides a number of interesting insights for further investigation (see Bacchetta & Espinosa, 1995, 2000 and Huizinga & Nielsen, 2002 for formal theoretical models). Specifically, the role of statutory tax parameters, the marginal cost of public funds and enforcement costs seem to be crucial in determining the level of information exchange between local tax authorities. Moreover, the empirical literature conducted to date proposes several explanatory variables that should be taken into account in this analysis. According to Ligthart and Voget (2010), the regional size has a positive impact on the incentive to share information while distance between regions reduces the flow of information between them. As regards the Spanish case, variables such as reciprocity (a factor detected by Ligthart and Voget, 2010), the political alignment between regions³, and budgetary factors are further determinants that might have an impact on the tax administrations' willingness to cooperate. In fact recent empirical papers examining the determinants of tax administration suggest that political as well as budgetary variables play a role in determining the tax administration's policies (see, for example, Young *et al.*, 2001; Baretto *et al.*, 2002; Esteller-Moré, 2005, 2011).

² For instance, in the 2006 report, the CA of Catalonia states: "It should be noted that existing experiences show an unequal behaviour of the different CAs in their degree of compliance with the obligation to submit the information and the due income to the competent CA. The perception that the competent services of the Directorate General of Taxes of the Catalan government have on this issue is that certain CAs systematically and, in many cases, violate that obligation." (p. 39 of the report). Moreover, from informal conversations maintained with past directors of the Catalan tax authority we know that to deal with this problem they choose not to transmit information to these CAs until the latter start to share their information. This seems to suggest that 'reciprocity' might play a relevant role in determining the extent to which information is shared between CAs. Indeed, and as a further evidence of this, in its 2002 report, the CA of Castilla León openly states that it would not return revenue due to the CA of Madrid until the latter transferred revenues due to them.

³ This factor is relevant since we refer our analysis to a federal context but it seems not relevant for an international framework analysis.

Data and Empirical strategy

Data on the information shared by Spanish administrations (and used in constructing our endogenous variable) are extracted from the report “Informe sobre la cesión de tributos a las Comunidades Autónomas” published annually with the Spanish National Budget (“Proyecto de Presupuestos Generales del Estado”). More specifically, we have access to data on the total number and amount of transfers resulting from misreported tax returns (“Transferencias por aplicación de los puntos de conexión”) collected (returned) by each Spanish region (including those regulated by the “foral regime”) from (to) any other region during the period 1987-2009. Table 1 presents an example of this information for the CA of Madrid in 2009.

[TABLE 1]

Graphs 1 to 4 show the evolution of the aggregated information (graphs 1 and 2) and the total amount of tax revenues (graphs 3 and 4) transmitted by the CAs along the time. The evolution of these variables show a common time trend: both the alternative measures of the aggregate regional willingness to share information have increased during the available period. We will take this evidence into account when setting our empirical strategy.

[GRAPHS 1-4]

Our dataset allows us to identify both directions in the information-sharing process, which is undoubtedly an improvement on current studies in the literature. Moreover, the possibility that regional administrations might, over time, have learnt the advantages to be gained from cooperating (*i.e.*, from sharing information) provides us with the opportunity of adopting a dynamic approach. This would represent an additional methodological contribution to the literature.

More specifically, we shall take as our endogenous variable the number of transfers made by each CA to every other CA in any given year and use the (time-lagged) information received by a CA as a regressor to control for reciprocity. As such, our endogenous variable is defined as count data and a Poisson regression model should serve as our main estimation strategy. However, our (partial)⁴ dataset contains 42.4 percent zero-valued output. Thus, we believe that our endogenous variable may be censored at zero inasmuch as a zero value could alternatively indicate an actual absence of information being shared or that CAs do not choose to share information and claim to have zero information to transmit. Looking at the distribution of our endogenous variable makes this problem much more evident. Graph 5 shows the total distribution (which support is $\{0, 1, 2, \dots, 10533\}$) and it seems to suggest that censoring at zero occurs. But actually since there

⁴ Our current dataset comprises data only for the last 16 years as we are still waiting for the earlier years data to complete the data entry.

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are very few observations that report an extremely high cases of information shared this graph is not much informative. Graph 6 and 7 respectively presents the distribution of our endogenous variable for values smaller than 200 (this corresponds to 98% of the total cases) and for values smaller than 30 (around 90.6% of the total cases). Looking at those distributions the hypothesis of Poisson distribution seems reasonable. Then we maintain as our main approach the Poisson regression model.

[GRAPHS 5-7]

In order to account for censoring at zero we will perform a further analysis of robustness and following the approach by Ligthart and Voget (2010) we estimate a Tobit regression model⁵. Before undertaking these analyses, we will perform a baseline estimation of the determinants of information sharing at an aggregate level.

Baseline estimation

The purpose of this analysis is to determine the factors that might influence the regional willingness to share information at an aggregate level.

$$\begin{aligned} TOTtransn_{it} = & \rho_0 + \rho_1 TOTrecc_{it-1} + \rho_2 Left_{ijt} + \rho_3 El_{it} + \rho_4 GDPpc_{it} + \rho_5 Defpc_{it} \\ & + \rho_6 Transfexp_{it} + \rho_7 Ded_{it} + \rho_8 Pop_{it} + \vartheta_i + \tau_t + \epsilon_{it} \end{aligned} \quad (1)$$

We will use as endogenous variable $TOTtransn_{it}$, the total number of information shared by any region i in year t with any other region. This is a measure of the aggregate regional willingness to share information. We introduce $TOTrecc_{it-1}$, the total information (or alternatively the total tax revenues) received by region i during the year $t - 1$ as a measure of aggregate reciprocity. $Left_{ijt}$ is a dummy variable equal to one if the party in office in a specific region and year is to the left of the political spectrum. El_{it} , another dummy equal to one if there is an election in region i during the year t , is introduced to control for the electoral cycle. We use per capita GDP ($gdp_{pc_{it}}$) to control for the regional economic cycle. Pop_{it} is the total population and accounts for regional size. The per capita deficit ($def_{pc_{it}}$) and the total amount of transfers received from the central government divided by total regional expenditure ($transfexp_{it}$) are introduced to account for further relevant budgetary factors. To account for possible normative modifications to the statutory tax parameters, we include a dummy (Ded_{it}) equal to one if the regional government i makes a marked deduction in (at least) one tax regime during the year t . We control for fixed effects ϑ_i and we introduce a time trend variable τ_t . ϵ_{it} is the error term. We will estimate equation (1) through a Within estimation strategy.

⁵ A further improvement will be considering also the Heckman's (1979) selection model, a generalization of the Tobit model, which should enable us to explain the source of censoring. This methodology was also considered by Ligthart and Voget (2010).

Poisson regression model

Through this analysis we want to investigate the determinants of the actual information-sharing process that takes place between any two regions.

$$Transn_{ijt} = \alpha_0 Recx_{ijt-1} + \alpha_1 Dist_{ij} + \alpha_2 Pol_{ijt} + \alpha_3 El_{it} + \alpha_4 GDPpc_{it} + \alpha_5 Defpc_{it} + \alpha_6 Transfexp_{it} + \alpha_7 Ded_{it} + \alpha_8 Pop_{it} + \vartheta_i + \tau_t + \varepsilon_{it} \quad (2)$$

$Transn_{ijt}$ is our endogenous variable and represents the number of cases of misreported taxes transferred from region i to region j during year t . If we refer to the equation (1) we have that $TOTtransn_{it} = \sum_j Transn_{ijt}$. $Recx_{ijt-1}$ accounts for reciprocity between region i and region j and could alternatively represent the number of cases or the amount of tax revenues received by region i from region j during the year $t-1$. Also in this case referring to equation (1) we have that $TOTrecx_{it-1} = \sum_j Recx_{ijt-1}$. We expect this variable to affect significantly and positively $Transn_{ijt}$: a region's motivation to share information with another administration should reflect the past willingness of the latter to cooperate with the former. $Dist_{ij}$ accounts for the distance between region i and region j ; Pol_{ijt} is a dummy variable that accounts for a political alignment between the two regions. We expect these three variables to be significant and we expect a negative coefficient for $Dist_{ij}$ and a positive one for Pol_{ijt} . Then we control for political and budgetary variables of region i . Fixed effects and time trends are then introduced while ε_{it} is the error term. The parameters are estimated by maximum likelihood.

Tobit model

$$Transn_{ijt} \equiv \begin{cases} Transn_{ijt}^* & \text{if } Transn_{it}^* \geq 0 \\ 0 & \text{if } Transn_{it}^* < 0 \end{cases} \quad (3)$$

$Transn_{ijt}$ is the information transmitted from region i to region j during the year t while $Transn_{ijt}^*$ represents the latent variable, *i.e.* the propensity of region i to share information with region j :

$$Transn_{ijt}^* = \beta_0 Recx_{ijt-1} + \beta_1 Dist_{ij} + \beta_2 Pol_{ijt} + \beta_3 El_{it} + \beta_4 GDPpc_{it} + \beta_5 Defpc_{it} + \beta_6 Transfexp_{it} + \beta_7 Ded_{it} + \beta_8 Pop_{it} + \vartheta_i + \tau_t + u_{it} \quad (4)$$

The parameters of equation (4) are estimated by maximum likelihood.

3. Preliminary and partial results

Our preliminary results are based on a dataset composed by the last 16 available years and for this reason they are still partial. Nevertheless we can stress some interesting insights on the information-sharing process that involves the Spanish regional administrations.

Baseline estimation

The table 2 presents the evidence obtained from the baseline estimation. In the first column we account for reciprocity using the total information received by a region from the others during the previous year while in the second model we use the total tax revenues received. The results seem to suggest that there are two main determinants of the aggregate willingness to share information. The most important result regards the aggregate level of reciprocity that is positively related with the total information shared by the regions. This is a reasonable result and confirms the expected trend. We also find that the total population, which accounts for the regional size, is positively related with the endogenous variable. Moreover also the “Time trend” seems to play a role: the passing of the time positively affects the information sharing process confirming the results of the previous literature.

Poisson regression model

In Table 3 we present the results obtained estimating equations (2). Specification (1) to (5) simply differs regarding the number of considered control variable. An interesting result that is robust to any specification regards the role of the reciprocity proxied by the information received by region i from region j during the previous year. The results obtained at an aggregate level with the baseline estimation are confirmed: the information shared by a region with another one positively depends on the information received from the latter in the previous year. This is the expected result: the willingness to share information with another regional tax administration positively depends on the past propensity of the latter to collaborate. The political alignment between two regions, which is a specific measure of reciprocity, goes in the same direction: two regions with the same political color share more information among them in comparison with two non aligned governments. Looking at the evidences on the Time trend and the regional size (proxied by the regional population) we obtained sound results that confirm the baseline estimation result. The Time trend suggests that the passing of the time favors an increase in the information sharing between regional tax authorities confirming the trivial evidence presented before. In particular since the coefficients of the squared time trend are positive and significant we can state that the effect of the passing of the time on this process is positive and convex. The regional size is positively associated with the sharing of information. We also obtain significantly different from zero positive coefficient for the Transfers-Expenditure ratio and the per capita deficit. This is congruent with the presence of income effects that suggests that the budgetary variables matters in determining this process. The electoral cycle also seems to play a role: in presence of election a region shares less information. This seems to suggest that there is a connection between the political power and the administrative one. The dummy Deduction substantially accounts for competition on the statutory tax

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parameters and is significant and negative: a reduction in the effective tax rate of wealth taxes through a competition on the deduction schemes is associated with less information shared. This is an interesting result that captures the tradeoff between competition and cooperation discussed in the literature. If a region is competing on wealth taxes in order to attract tax bases through a statutory tax parameters modification, it will be less likely to cooperate and share information.

Robustness checks

In Table 4 we present the results obtained estimating equation (2) using as alternative measure of reciprocity the tax revenues received by region i from region j . We find that the outcomes remain qualitatively the same as in Table 3 confirming that the results are not sensible to different measures of reciprocity.

In Table 5 we show the evidence from the Tobit regression model (equation 4). Also in this case the coefficient of the reciprocity proxy is positive and significantly different from zero confirming that this variable plays an important role. The magnitude of this variable on the transferred information is much higher than the one obtained with the Poisson model but this is reasonable since this specification controls for censoring at zero. While we lose most of the result on the other variable and controls we obtain that accounting for censoring the distance between the regions is negative and significant: two distant regions share less information than two closer ones. This corroborates the previous literature although the estimates of the Poisson models are not significantly different from zero and so this result is not robust to different specifications.

4. Partial conclusions and further developments

In this paper we have analyzed another level of tax interdependence that may occur in federal contexts: horizontal cooperation between sub-central administrations in the form of tax information sharing. In particular the study shows some evidence on the determinants of the information-sharing process among Spanish regional tax authorities. Although the results are based on an incomplete dataset, we can stress some preliminary considerations. Our analysis suggests that information sharing is a matter of reciprocity corroborating the theoretical literature on international capital mobility and confirming the results of the previous empirical evidence. In particular the role played by this variable seems to be robust to different specifications. Moreover a specific type of reciprocity also plays a role: the political alignment between two regions. Among other variables, various confirm our expectations but others present results that are not robust to different models and this calls for further econometric analysis. In particular we will consider the Heckman selection model to better account for censoring issues. Moreover we will also try to better characterize the behavior of the regional tax authorities through a theoretical model incorporating federal frameworks' specific features that previous literature on international taxation did not take into account.

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TABLES AND GRAPHS

Table 1: Total number and amount of transfers from and to the CA of Madrid, 2009.

CA	MADRID – 2009			
	Transfers			
	Transmitted		Received	
	Number of cases	Thousands of euros	Number of cases	Thousands of euros
Andalucía	1867	11334	73	2452
Aragón	215	3681	5	250
Asturias	91	476	4	140
Baleares	140	891	3	22
Canarias	128	395	7	414
Cantabria	63	408	9	39
Castilla y León	919	4179	16	1630
Castilla-La Mancha	2289	12500	23	3006
Cataluña	208	1019	13	1515
Extremadura	926	5542	11	331
Galicia	264	2281	18	496
Murcia	461	2864	2	24
La Rioja	75	3076	1	4
Valencia	1809	11039	16	77
Navarra	6	19	0	0
País Vasco	10	17	1	2
Madrid	0	0	0	0
Federal government	18	175	2	50
Total	9489	59896	204	10452

Table 2: Baseline estimation (Aggregate willingness to share information, Within – Fixed Effect estimation)

	(3) Tot Transferred Information WITHIN-FE	(4) Tot Transferred Information WITHIN-FE
L.TOT_Received_information	0.031*** (3.434)	
L.TOT_Received_Revenues		0.056*** (7.007)
Leftist government	-104.454 (-1.553)	-94.229 (-1.578)
Deduction	-13.128 (-0.173)	-99.555 (-1.453)
Election	35.038 (0.724)	21.132 (0.492)
Deficit_pc	283.620 (1.044)	207.665 (0.860)
Transfers-Expenditure_ratio	52.088 (0.258)	119.882 (0.669)
Population	0.001*** (6.138)	0.000*** (3.182)
Gdp_pc	-14.148 (-1.176)	-11.957 (-1.122)
Time Trend	38.596*** (2.770)	38.177*** (3.091)
_cons	-1801.933*** (-5.209)	-915.704*** (-2.696)
<i>N</i>	150	150
<i>R</i> ²	0.615	0.697
adj. <i>R</i> ²	0.545	0.642
Fixed Effects	YES	YES

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Determinants of the information sharing process (Poisson regression model, Fixed effects in all specifications)

	(1)	(2)	(3)	(4)	(5)
	Transferred Information	Transferred Information	Transferred Information	Transferred Information	Transferred Information
L.Received_information	0.00007*** (12.235)	0.00007*** (12.066)	0.00007*** (12.063)	0.00008*** (13.350)	0.00008*** (13.869)
Political Alignment	0.082*** (3.226)	0.091*** (3.579)	0.089*** (3.500)	0.083*** (3.268)	0.078*** (3.048)
Distance	-0.002 (-0.000)	-0.010 (-0.000)	0.005 (0.000)	0.001 (0.000)	-0.001 (-0.000)
Time Trend	0.197*** (25.571)	0.200*** (25.863)	0.206*** (14.347)	0.178*** (12.181)	0.172*** (11.681)
Squared Time Trend	0.001 (1.131)	0.000 (0.743)	0.000 (0.313)	0.003*** (3.293)	0.004*** (4.080)
Population	0.000*** (14.586)	0.000*** (11.388)	0.000*** (11.299)	0.000*** (9.409)	0.000*** (9.749)
Transfers/Expenditure	0.713*** (7.321)	0.563*** (5.681)	0.548*** (5.261)	0.369*** (3.432)	0.321*** (2.964)
Deficit		0.721*** (7.793)	0.721*** (7.792)	0.792*** (8.592)	0.776*** (8.407)
Per capita GDP			-0.003 (-0.444)	0.001 (0.108)	0.000 (0.049)
Election Year				-0.114*** (-7.935)	-0.086*** (-5.353)
Deduction					-0.086*** (-3.835)
<i>N</i>	2070	2070	2070	2070	2070
Log likelihood	-14405.305	-14375.548	-14375.450	-14343.551	-14336.222
Wald chi2	21649.251	21717.309	21719.101	21758.722	21787.451
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Fixed Effects	YES	YES	YES	YES	YES

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Determinants of the information sharing process (Alternative measure of reciprocity - Poisson regression model, Fixed effects in all specifications)

	(1)	(2)	(3)	(4)	(5)
	Transferred Information	Transferred Information	Transferred Information	Transferred Information	Transferred Information
L.Received_Revenues	0.00004*** (11.689)	0.00004*** (11.472)	0.00004*** (11.460)	0.00004*** (12.718)	0.00004*** (13.228)
Political Alignment	0.075*** (2.945)	0.083*** (3.300)	0.083*** (3.274)	0.077*** (3.010)	0.070*** (2.755)
Distance	0.004 (0.000)	0.002 (0.000)	-0.062 (-0.000)	0.004 (0.000)	0.001 (0.000)
Time Trend	0.200*** (25.770)	0.203*** (26.037)	0.203*** (14.183)	0.176*** (11.991)	0.169*** (11.450)
Squared Time Trend	0.000 (0.486)	0.000 (0.131)	0.000 (0.094)	0.003*** (3.082)	0.004*** (3.930)
Population	0.000*** (14.427)	0.000*** (11.329)	0.000*** (11.156)	0.000*** (9.141)	0.000*** (9.459)
Transfers/Expenditure	0.702*** (7.223)	0.552*** (5.583)	0.552*** (5.295)	0.373*** (3.476)	0.324*** (2.997)
Deficit		0.713*** (7.704)	0.713*** (7.704)	0.785*** (8.520)	0.767*** (8.309)
Per capita GDP			-0.000 (-0.016)	0.004 (0.593)	0.004 (0.561)
Election Year				-0.117*** (-8.077)	-0.087*** (-5.426)
Deduction					-0.094*** (-4.139)
<i>N</i>	2070	2070	2070	2070	2070
Log likelihood	-14406.818	-14377.729	-14377.729	-14344.636	-14336.096
Wald chi2	21701.400	21770.301	21770.360	21819.335	21862.618
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Fixed Effects	YES	YES	YES	YES	YES

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

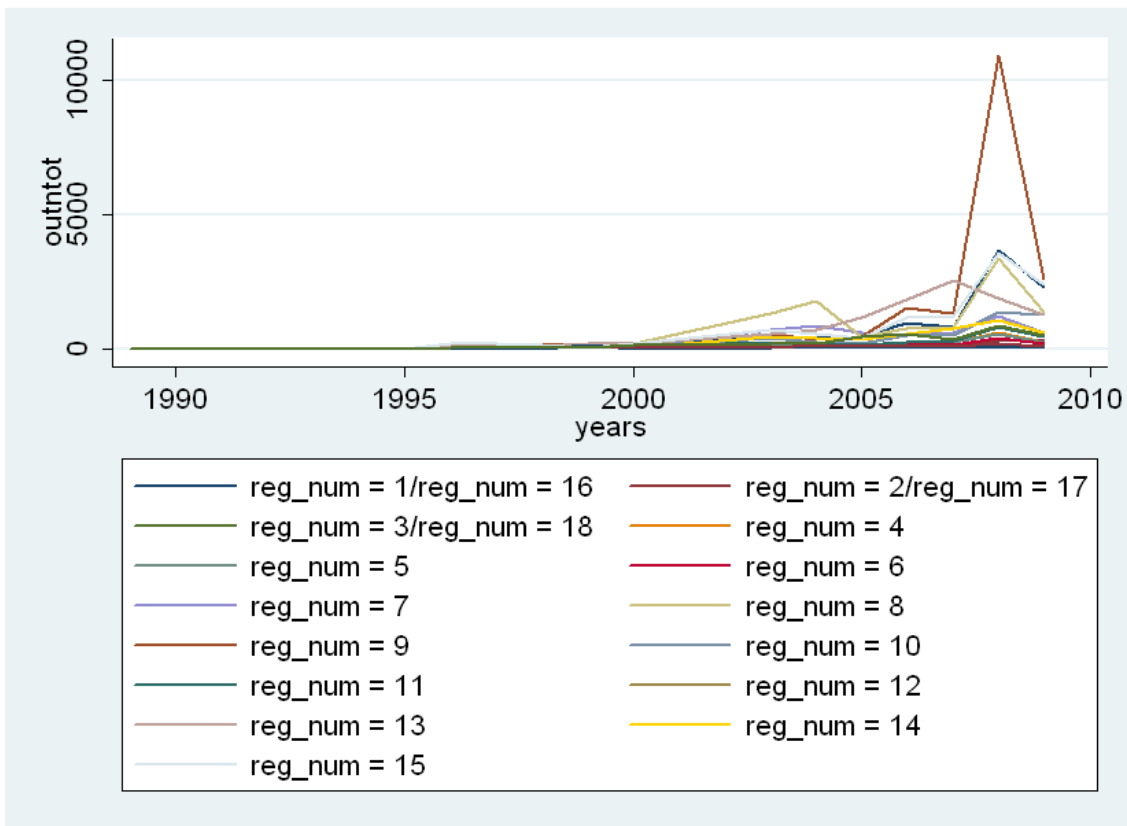
Table 5: Determinants of the information sharing process (Tobit regression model, Fixed effects in all specifications)

	(1)	(2)	(3)	(4)	(5)
	Transferred Information	Transferred Information	Transferred Information	Transferred Information	Transferred Information
L.Received_information	0.015*** (4.788)	0.014*** (4.751)	0.014*** (4.682)	0.014*** (4.676)	0.014*** (4.679)
Political Alignment	-5.107 (-1.100)	-5.374 (-1.160)	-6.356 (-1.364)	-6.253 (-1.341)	-6.398 (-1.372)
Distance	-0.018** (-2.479)	-0.018** (-2.481)	-0.018** (-2.466)	-0.018** (-2.461)	-0.018** (-2.528)
Time Trend	-0.122 (-0.062)	-0.719 (-0.365)	-5.661** (-2.171)	-5.728** (-2.194)	-6.373** (-2.409)
Squared Time Trend	0.598*** (3.323)	0.629*** (3.490)	0.833*** (4.306)	0.846*** (4.347)	0.933*** (4.587)
Population	0.000*** (5.058)	0.000*** (4.858)	0.000*** (4.487)	0.000*** (4.499)	0.000*** (4.479)
Transfers/Expenditure	-13.163 (-0.720)	-21.531 (-1.160)	-8.827 (-0.463)	-10.488 (-0.545)	-11.362 (-0.591)
Deficit		57.768** (2.437)	60.026** (2.533)	59.118** (2.490)	58.439** (2.463)
Per capita GDP			2.883*** (2.882)	2.876*** (2.875)	2.984*** (2.978)
Election Year				-2.797 (-0.634)	-1.832 (-0.411)
Deduction					-10.026 (-1.469)
_cons	-42.826*** (-3.956)	-36.787*** (-3.325)	-63.561*** (-4.368)	-62.641*** (-4.283)	-62.605*** (-4.290)
<i>N</i>	2190 802	2190 802	2190 802	2190 802	2190 802
Log likelihood	-8403.950	-8400.994	-8396.792	-8396.590	-8395.511
Wald chi2	313.431	320.333	327.605	327.863	330.199
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Fixed Effects	YES	YES	YES	YES	YES

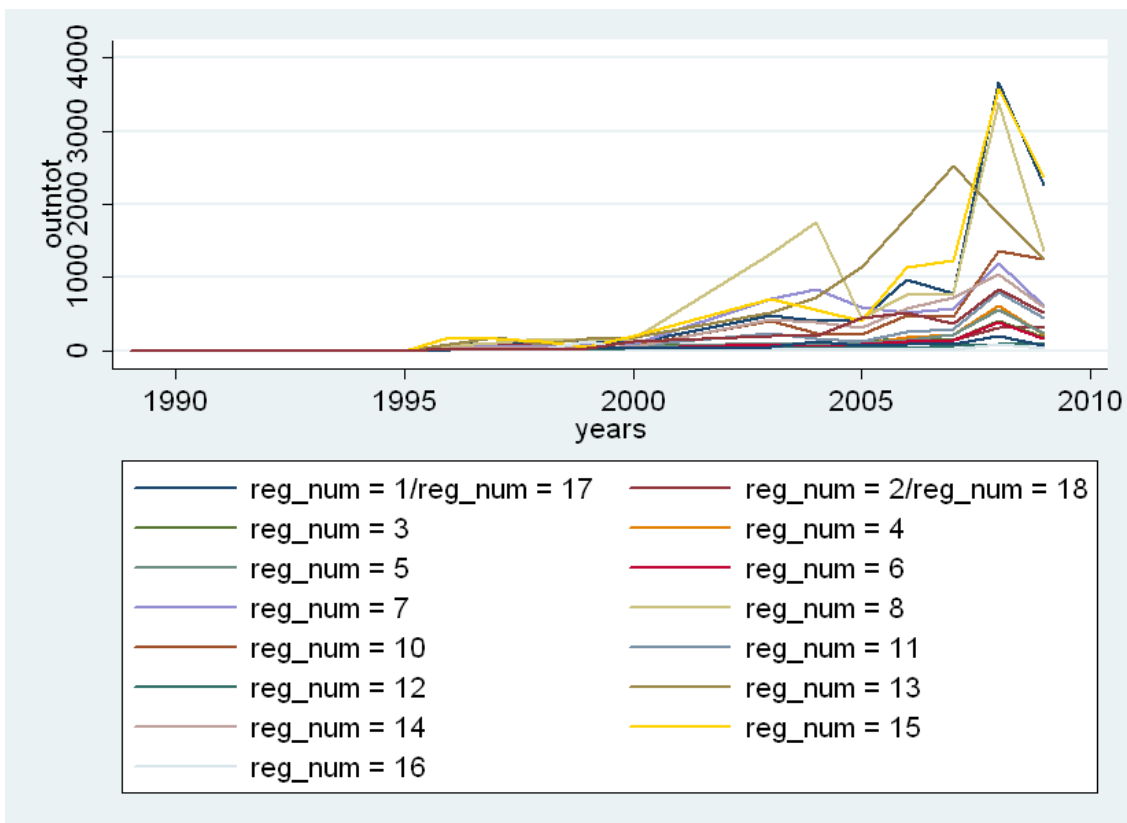
t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

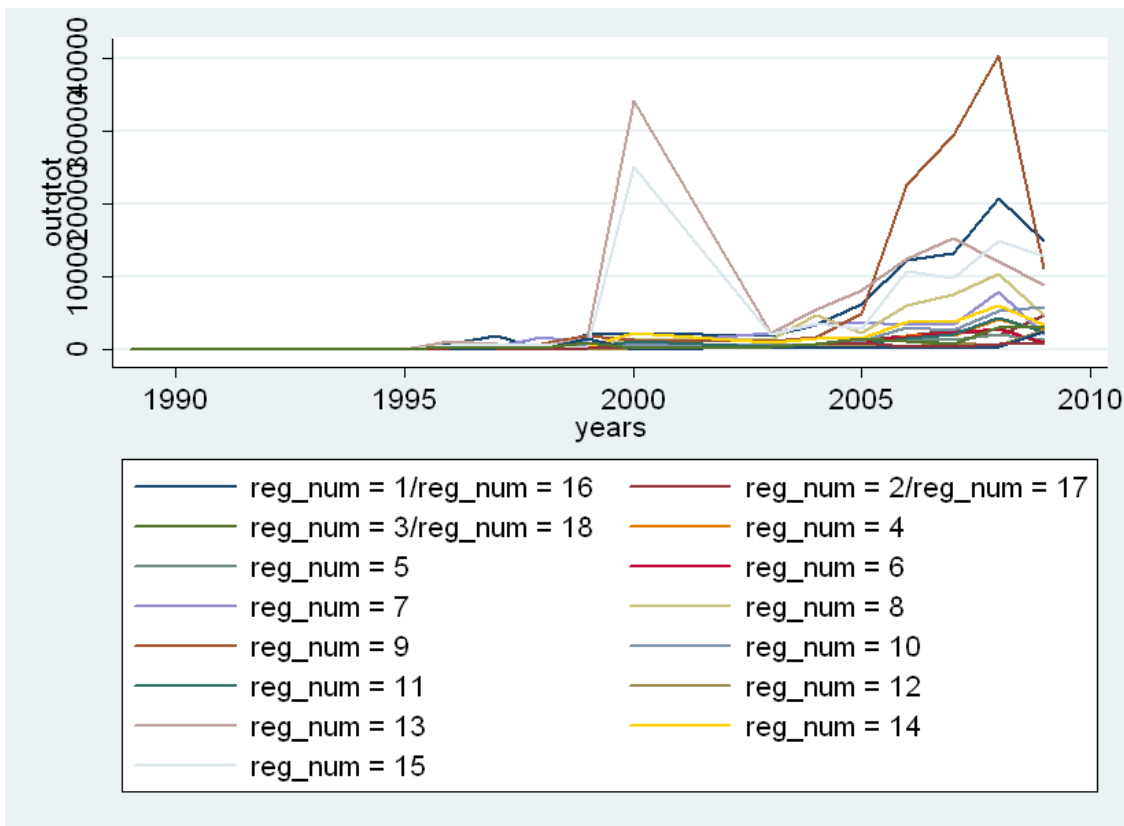
Graph 1: Evolution of the total number of information shared by the CAs (1996-2009).



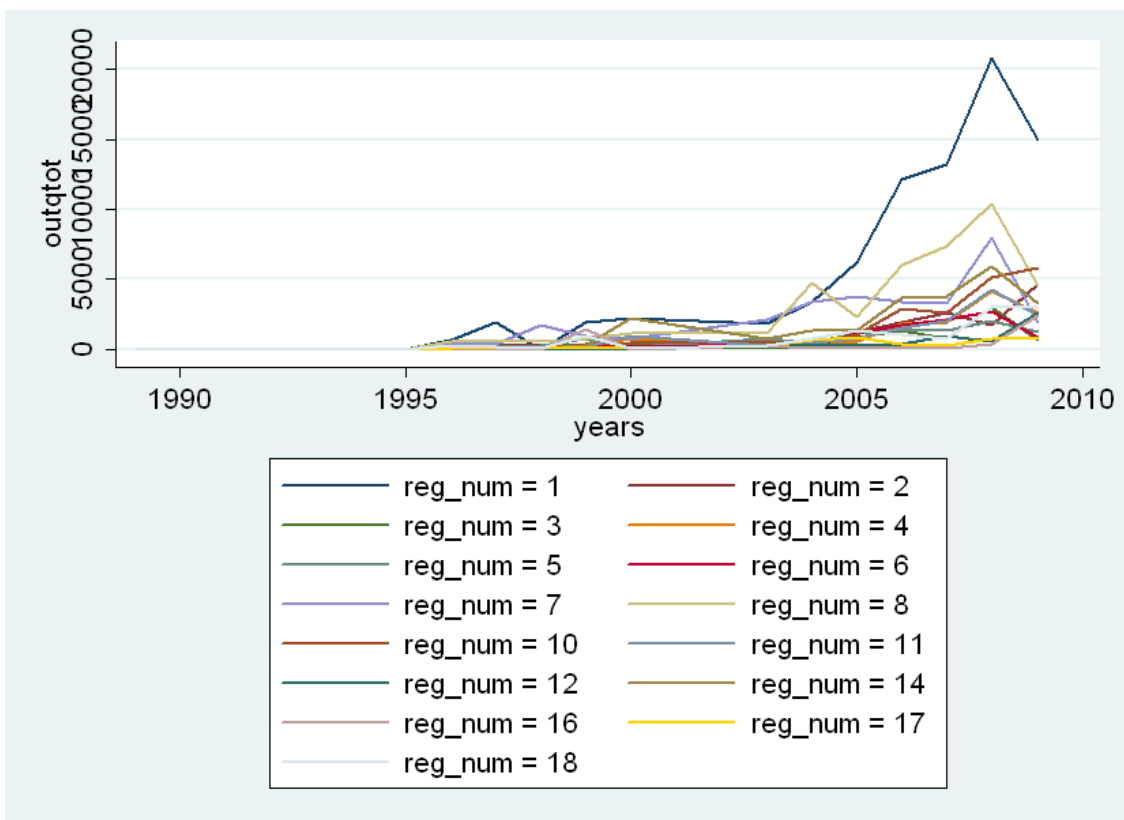
Graph 2: Evolution of the total number of information shared by the CAs (1996-2009) without Castilla La Mancha.



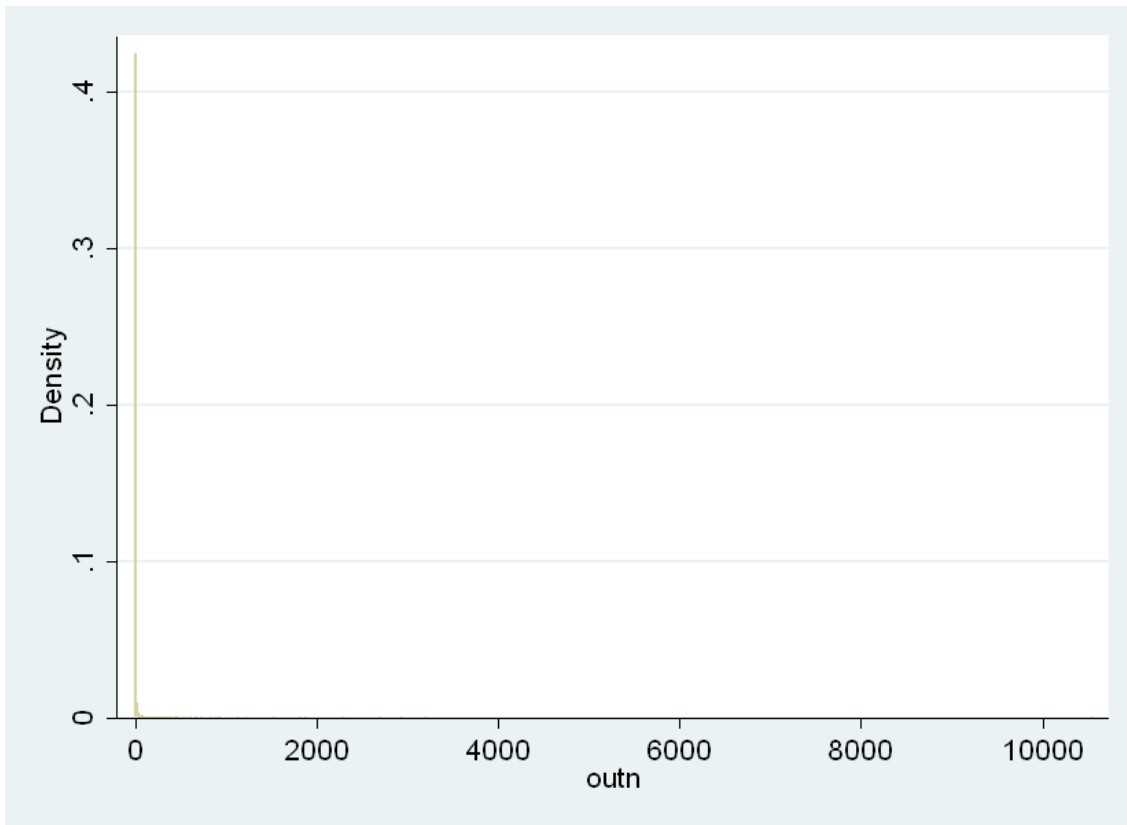
Graph 3: Evolution of the total amount of tax revenues transmitted by the CAs (1996-2009).



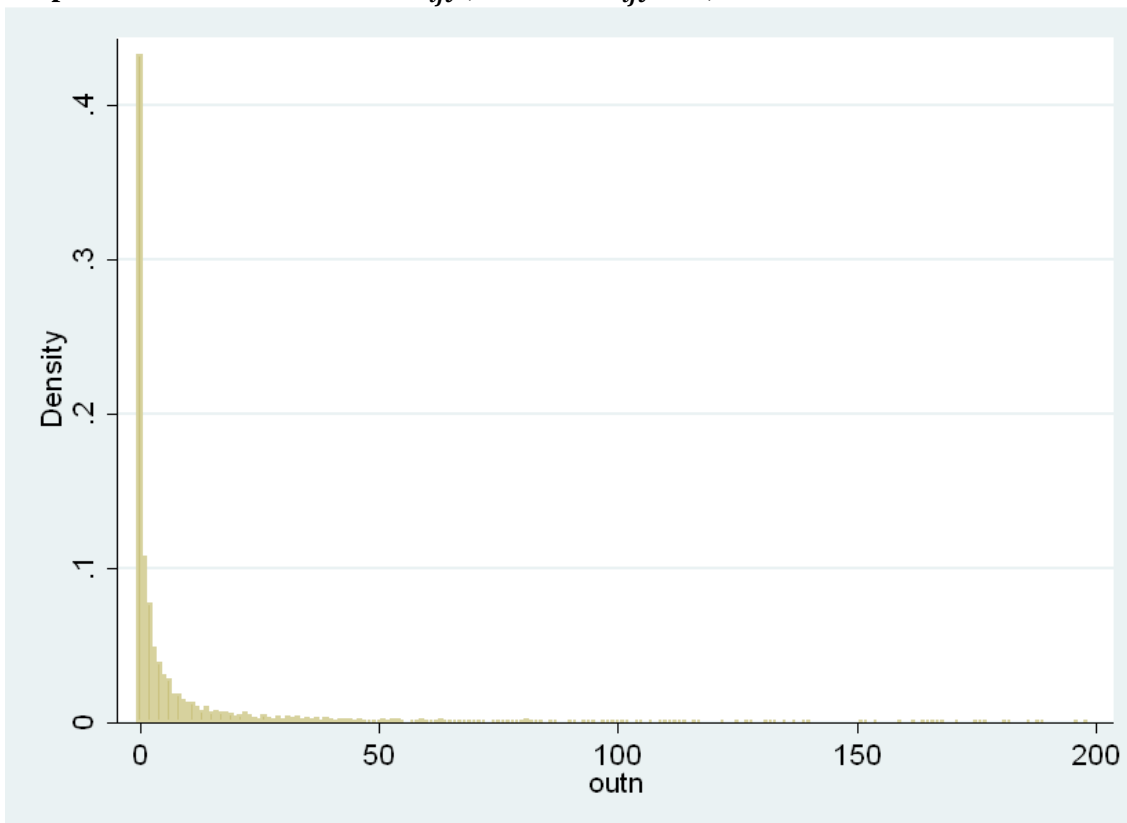
Graph 4: Evolution of the total amount of tax revenues transmitted by the CAs (1996-2009) excluding Madrid, Valencia and Castilla La Mancha.



Graph 5: Distribution of $Transn_{ijt}$ (total distribution)



Graph 6: Distribution of $Transn_{ijt}$ (for $Transn_{ijt} < 200$)



Graph 7: Distribution of $Transn_{ijt}$ (for $Transn_{ijt} < 30$)

