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LOCAL GOVERNMENT DEBT: AN APPLICATION TO THE SPANISH CASE

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ABSTRACT: For the last years, Europe has been subject to fiscal austerity in order to satisfy the Maastrich criteria. In this way, Spanish municipalities have been affected by new regulations and local government structure has changed. This paper is focused on the main factors that explain local government debt. In particular, budgetary information of a group of Spanish municipalities is used (1990-2000). Econometric analysis of cross section and panel data are presented

Key words: Fiscal federalism, Local Government, debt, decentralization.

Clasificación JEL: I1, H71, H51, H72

1. Introduction.

After the approval of Spanish Constitution in 1978, Local Administrations and in particular Spanish municipalities have been affected by new regulations which influence government expenditure and public revenue. At this moment, one of the problems of Local Corporations comes from the different financing reforms (Law 51/2002, of December 27, Law 39/1988, of December 28), and the impact of the 18/2001 General Budgetary Stability Law and the development of the “Local Pact”.

The objective of this paper is to study the main socioeconomic, political and budgetary factors that motivate local government debt. In particular, the main factors that affect local government debt are analyzed. For this purpose budgetary information of a group of Spanish municipalities, for which we have information from 1992 to 1999, is used.

The structure of the paper is as follows. Section 2 presents a survey of the main studies related with local government debt. Next, we propose an econometric model based on panel data. After a detailed description of the sample, as well as the main variables used, the results are presented in Section 3. Last section summarizes some concluding remarks.

2. Recent Literature about local government debt.

The diverse justifications in the Theory of the Fiscal Federalism to establish limitations to local government debt are based on three types of considerations: Intergenerational justness, budgeting stability and limitations of debt as mechanism of fiscal illusion (Bosch and Suárez Pandiello, 1994).

In this way, there are different studies focused on modelling local government debt (Ezquiaga, 1996; Arnau, 1997; Espina, 1997, Brusca and Labrador, 1998; Escudero and Prior, 2002 and 2003; Cabasés *et al.*, 2003) although most of them are focused on autonomous communitites (Monasterio and Suárez Pandiello, 1993 y 1996; García-Milá and McGuire, 1993; García-Milá *et al.*, 1999; Monasterio, *et al.*, 1999; Benito *et al.*, 2001; López Laborda and Vallés, 2002; Alcalde and Vallés, 2002; Vallés,

1999 y 2002; Álvarez and Salinas, 2002 y 2003). In Escudero and Prior (2002) the local government debt and its control in 1995 and 1996 are analysed. Their results confirm that decentralized local governments have higher levels of consolidated debt. Also, in Escudero and Prior (2003), the effects of political cycles are studied for the period 1998 to 1999. Their results show that the year previous elections, local spending is higher. Other empirical studies are González-Páramo (1995), Fernández (2003), Cabases et al. (2003), Heins (1963), Mitchell (1967), McEachern (1978), Epple and Spatt (1986), Bayoumi and Eichengreen (1994 and 1995), Dafflon (1996), Bennet and Dilorenzo (1982), Blewet (1984), Bunch (1991), Von Hagen (1991) Farnharm (1985), Pogue (1970) Kiewiet and Szakaly (1996), Joulfaian and Marlow (1989) and Merrifield (1994). However, it is not clear which variables explain local government debt.

3. The model.

In this part of the paper, we will focus on the factors that could explain Spanish local government debt. We will explain local government debt, D , according to this model:

$$D = D(E, P, F) \quad (1)$$

where E is a set of socioeconomic variables, P is a set of political variables and F are some variables related to financial structure of local government. These variables are defined in TABLE 1.

TABLE 1
Variables

VECTOR	VARIABLES	DEFINITION	FORMALIZATION
D	<i>DPC</i>	Net Variation of passive financial	Chapter IX Revenues minus Chapter IX Expenditures
	<i>Y</i>	Income (of each municipality)	Net Income
E	<i>GRAN</i>	Dummy for Big Cities	1 for Madrid, Barcelona, Valencia, Zaragoza, Sevilla and Málaga; 0 otherwise
P	<i>CIC</i>	Dummy for local electoral cycle	1 if the year is previous to local elections; 0 otherwise
	<i>TEND</i>	Trend	Trend 1992=1, 1993=2, ...
F	<i>INV</i>	Real Investments	Chapter VI Expenditures
	<i>AHB</i>	Gross Savings	Current Revenues – Current Expenditures
	<i>PA_OR</i>	Payments / Obligations	Payments / Obligations
	<i>OR_PD</i>	Obligations / Final Credits	Obligations / Final Credits

All the monetary variables have been divided by local population of each year. We have considered as dependent variable the level of local debt, measured through the net variation of passive financial (*DPC*). Apart from the independent variables, we should clarify other questions that do not appear reflected in the previous table. In this way, we have defined a dummy variable (*GRAN*) which takes the value one for these municipalities with population higher than 500.000 inhabitants. Also, we have included another variable (*CIC*) in order to test the electoral cycle hypothesis. That is, the year prior elections, politicians prefer to increase credit instead of increasing personal income tax. Finally, we have included investment and gross saving. TABLE 2 presents summary statistics of the variables used in the estimates for each one of the considered years.

TABLE 2
Summary statistics

1992	DPC	INV	AHB	CFP	COMP
Mean	48.56	26.67	18.31	119.02	0.53
Medium	29.14	20.78	24.32	112.23	0.52
Std. Dev.	58.30	23.26	30.87	42.43	0.11
V.C.	1.20	0.87	1.69	0.36	0.21
Range	326.83	151.55	147.30	270.90	0.50
1993	DPC	INV	AHB	CFP	COMP
Mean	37.82	28.27	22.20	122.14	0.53
Medium	22.36	23.06	23.02	115.18	0.52
Std. Dev.	43.46	19.58	33.76	43.37	0.10
V.C.	1.15	0.69	1.52	0.36	0.19
Range	193.49	88.61	211.04	261.53	0.44
1994	DPC	INV	AHB	CFP	COMP
Mean	49.46	29.12	32.7	126.2	0.50
Medium	29.68	23.06	29.39	117.1	0.50
Std. Dev.	52.8	23.64	34.45	46.46	0.12
V.C.	1.07	0.81	1.05	0.37	0.24
Range	191.98	121.29	279.91	292.31	0.51
1995	DPC	INV	AHB	CFP	COMP
Mean	36.87	29.07	36.67	130.33	0.52
Medium	25.45	26.81	32.84	121.67	0.52
Std. Dev.	46.16	20.37	33.48	46.2	0.11
V.C.	1.25	0.70	0.91	0.35	0.21
Range	281.66	99.74	232.06	288.54	0.53

Source: Own Elaboration.

TABLE 2 (continuation)
Summary statistics

1996	DPC	INV	AHB	CFP	COMP
Mean	44.05	25.82	38.57	138.56	0.51
Medium	26.03	21.16	37.67	131.15	0.51
Std. Dev.	53.83	17.94	29.49	45.04	0.11
V.C.	1.22	0.69	0.76	0.33	0.22
Range	274.66	82.06	226.31	291.78	0.57
1997	DPC	INV	AHB	CFP	COMP
Mean	55.77	31.2	52.71	150.44	0.47
Medium	33.92	27.58	49.96	139.38	0.47
Std. Dev.	74.07	20.04	36.72	52.87	0.11
V.C.	1.33	0.64	0.70	0.35	0.22
Range	479.59	113.93	236.83	357.19	0.47
1998	DPC	INV	AHB	CFP	COMP
Mean	30.73	45.17	58.25	159.47	0.46
Medium	18.57	39.85	57.5	146.48	0.46
Std. Dev.	37.05	26.09	34.2	56.59	0.10
V.C.	1.21	0.58	0.59	0.35	0.21
Range	217.15	151.67	247.59	402.02	0.54
1999	DPC	INV	AHB	CFP	COMP
Mean	22.75	56.54	65.46	166.67	0.44
Medium	16.29	48.94	63.29	157.96	0.44
Std. Dev.	27.56	39.98	33.25	55.39	0.09
V.C.	1.21	0.71	0.51	0.33	0.21
Range	163.47	313.71	234.73	382.75	0.54

Source: Own Elaboration.

From previous results, it is deduced that the variable net per capita local debt (*DPC*) has experienced during the last years continuous variations although the relative dispersion has been stabilized in the nineties. We have to point out that we are considering Spanish local governments of medium and big size in terms of population (but at the same time very different), for which there is available information since 1992 to 1999. Also, real investments, *INV* (Chapter VI Expenditure) in 1999 doubles its value with respect to 1992. On the other hand, Gross Savings (*AHB*) increase gradually in most of the considered local governments.

Finally, TABLE 3 shows summary statistics for the municipalities classified by population.

TABLE 3
Summary statistics considering municipalities' population

Less than 75000 inhabitants																
	DPC				INV				AHB				COMP			
	Mean	Medium	VC	Range	Mean	Medium	VC	Range	Mean	Medium	VC	Range	Mean	Medium	VC	Range
1992	43,19	38,22	0,72	97,98	31,99	24,59	0,71	78,34	4,03	13,90	8,32	118,91	0,54	0,53	0,21	0,42
1993	34,37	20,32	0,92	93,37	33,62	23,24	0,77	0,77	10,99	11,83	3,76	178,62	0,55	0,58	0,17	0,38
1994	28,68	28,68	0,92	91,65	30,77	22,77	0,93	0,93	0,93	24,25	1,42	164,53	0,52	0,54	0,23	0,46
1995	26,72	24,23	0,76	84,09	35,09	33,41	0,77	94,30	21,68	25,64	1,59	149,51	0,54	0,55	0,22	0,53
1996	31,15	20,50	0,82	98,99	31,33	27,69	0,65	79,22	28,16	31,23	1,05	144,11	0,55	0,56	0,21	0,48
1997	21,61	14,71	0,88	61,79	37,25	29,75	0,70	97,12	36,84	35,23	0,85	121,92	0,51	0,49	0,21	0,41
1998	30,73	33,17	0,83	97,85	37,25	33,76	0,62	78,23	41,49	42,65	0,67	126,97	0,49	0,49	0,21	0,44
1999	28,55	25,74	0,83	84,73	43,11	43,20	0,56	87,35	45,23	44,70	0,60	90,74	0,44	0,44	0,22	0,53
75000-200000 inhabitants																
	DPC				INV				AHB				COMP			
	Mean	Medium	VC	Range	Mean	Medium	VC	Range	Mean	Medium	VC	Range	Mean	Medium	VC	Range
1992	31,93	27,25	0,77	82,21	40,90	35,01	0,64	97,36	19,70	28,37	2,09	161,57	0,53	0,52	0,22	0,47
1993	34,88	22,19	0,87	99,14	37,87	30,92	0,63	96,15	25,17	26,33	1,11	132,14	0,52	0,51	0,51	0,41
1994	37,67	27,11	0,72	97,92	39,13	38,63	0,57	93,76	28,01	24,65	1,06	141,97	0,50	0,50	0,22	0,44
1995	30,09	26,66	0,83	80,68	31,91	28,04	0,61	98,41	30,78	32,17	1,08	166,07	0,52	0,51	0,51	0,49
1996	22,95	15,65	1,04	94,31	32,55	22,83	0,72	93,91	39,12	39,46	0,83	154,45	0,50	0,50	0,22	0,47
1997	32,85	25,09	0,86	94,30	31,59	31,74	0,71	89,67	46,58	41,06	0,54	115,96	0,46	0,47	0,20	0,38
1998	27,38	17,90	0,95	96,15	41,95	40,58	0,56	95,06	38,73	33,90	0,74	92,19	0,45	0,46	0,20	0,41
1999	24,74	22,99	0,93	84,02	42,22	45,52	45,52	81,73	40,36	41,81	0,73	119,03	0,45	0,45	0,19	0,35

Source: Own Elaboration.

TABLE 3 (continuation)
Summary statistics considering municipalities' population

200000-500000 inhabitants																
	DPC				INV				AHB				COMP			
	Mean	Medium	VC	Range	Mean	Medium	VC	Range	Mean	Medium	VC	Range	Mean	Medium	VC	Range
1992	36,15	43,40	0,72	74,54	23,50	23,81	0,48	40,70	32,27	35,83	0,66	70,43	0,53	0,50	0,17	0,35
1993	40,20	32,03	0,63	66,97	27,68	26,73	0,43	40,79	42,39	43,42	0,61	95,63	0,51	0,51	0,16	0,31
1994	29,80	18,55	0,93	85,60	40,18	33,61	0,61	79,62	43,05	37,78	0,56	89,36	0,46	0,44	0,30	0,63
1995	29,80	26,96	0,85	82,22	36,69	36,06	0,61	82,77	44,16	50,19	0,49	75,67	0,49	0,47	0,22	0,42
1996	34,25	25,12	0,75	98,53	39,98	35,55	0,58	70,43	44,22	40,94	0,45	67,71	0,44	0,43	0,22	0,34
1997	23,42	16,35	1,13	87,84	33,60	25,09	0,73	91,52	49,60	56,84	0,50	81,34	0,43	0,42	0,26	0,38
1998	23,42	22,13	0,91	57,85	35,81	31,24	0,73	89,51	54,22	57,78	0,51	83,39	0,42	0,44	0,18	0,27
1999	28,81	22,04	0,88	94,96	28,32	25,13	0,71	79,82	51,59	57,95	0,58	95,86	0,39	0,41	0,24	0,33
Over 500000 inhabitants																
	DPC				INV				AHB				COMP			
	Mean	Medium	VC	Range	Mean	Medium	VC	Range	Mean	Medium	VC	Range	Mean	Medium	VC	Range
1992	12,96	13,99	0,49	21,42	27,72	28,01	0,55	47,15	18,63	30,65	2,11	123,61	0,49	0,52	0,19	0,28
1993	29,87	27,61	0,77	73,70	33,20	25,68	0,68	66,05	15,90	18,51	1,89	98,56	0,55	0,53	0,11	0,14
1994	28,55	24,97	0,41	29,68	36,71	28,56	0,55	57,72	30,92	33,05	0,64	58,38	0,47	0,47	0,15	0,19
1995	29,27	28,73	0,77	67,38	37,38	34,67	0,56	64,68	49,09	49,90	0,41	61,12	0,48	0,48	0,15	0,21
1996	30,77	33,15	0,50	38,74	21,72	21,61	0,59	37,76	34,79	39,62	0,46	47,38	0,50	0,50	0,09	0,15
1997	33,32	33,41	0,32	0,32	28,89	27,31	0,58	0,58	42,92	52,42	0,47	54,82	0,43	0,47	0,22	0,26
1998	30,87	26,94	0,55	51,31	37,48	41,91	0,51	62,13	46,84	58,97	0,48	56,18	0,41	0,44	0,17	0,19
1999	17,91	12,94	1,01	51,67	33,32	36,10	0,65	55,50	29,44	16,52	0,95	68,90	0,42	0,43	0,13	0,16

Source: Own Elaboration.

The database managed in this paper is a panel data that includes annual observations of 100 Spanish municipalities with population higher than 50.000 inhabitants for the period 1992-1999. This supposes to work with 800 individual observations. The information has been provided by *Subdirección General de Coordinación de las Haciendas Locales*. It is important to highlight that from liquidated expenditures, we have obtained the consolidated values. Finally, personal net income has been obtained from *Anuarios Comerciales de España del Servicio de Estudios de La Caixa* (1999).

It's important to point out that monetary variables are expressed in constant Euros (2001=100). These data, as well as population, are provided by *Instituto Nacional de Estadística de España*

In order to facilitate the interpretation of the results, we have chosen a linear specification which is presented in expression (1).¹ The explicit formulation of the model is the one in expression (2):

$$DPC_{it} = \mathbf{b}_0 + \mathbf{b}_1 Y_{it} + \mathbf{b}_2 GRAN_{it} + \mathbf{b}_3 CIC_t + \mathbf{b}_4 TEND_t + \mathbf{b}_5 AHB_{it} + \mathbf{b}_6 INV_{it} + \mathbf{b}_7 PA_OR_{it} + \mathbf{b}_8 OR_PD_{it}$$

[?] [?] [+] [?] [-] [+] [+] [+]

The expected signs of the coefficients are shown below each correspondent variable. With respect to income, it is quite difficult to determine *a priori* the expected sign of its coefficient, given that this variable compounds both elements of fiscal capacity and fiscal necessity, as Farnharm (1985) pointed out. Also, some authors think that there exists a *negative* effect, in the sense that lower-income people prefer debt financing because they have to pay less taxes in the present-day. On the contrary, higher-income people would be in opposition to an expansive debt policy (Adams, 1977). Nevertheless, these type of arguments are suitable for the USA, but they are not appropriate for the Spanish local public sector. The reason has to do with the referendum requirement that exists in many local and State governments in USA, whose aim is to reconcile voters' preferences and government's policy. Other authors like Kiewiet and Szakaly (1996) think that income exerts a positive influence on borrowing, given the fact that there exists a positive income elasticity for capital goods. Thus,

¹ Also, other specifications have been used (multiplicative, exponential, growth models, etc.) not improving the results, so finally these partial results have not been included in this paper.

municipalities with a broad proportion of higher-income inhabitants would also accumulate a higher amount of debt.

As we mentioned previously, it is also expected that electoral cycle had a positive effect on indebtedness due to the *illusion of the debt* and the governments' propensity to borrowing because it is a revenue with reduced political costs (Marlow and Joulfaiian, 1989; Escudero and Prior, 2003). On the other hand, the expected sign for the big cities dummy (*GRAN*) is ambiguous. These type of municipalities are characterized for a higher demand for public services and, as a consequence, a higher expenditure. However, they also receive a great amount of grants from the Central government in order to satisfy the *sufficiency principle* and, as a result, the net effect of *GRAN* on indebtedness is uncertain.

In addition, a higher level of public investments induces a higher amount of debt, taking into account the intergenerational equity principle. It is expected that the variables that approximate the expenditure deviations with respect the initial budgeted values, *PA_OR* and *OR_PD*, have a positive relationship with debt levels. Moreover, we can expect a negative sign for the coefficient of *AHB*, involving a big amount of revenues for the local government and, thus, a lower demand for debt financing. Finally, we have included a trend, *TEND*, in order to capture debt evolution in the period analyzed.

Estimates are shown in Table 4. We present two models, considering two different dependent variables. Firstly, we specified *DPCI* as gross indebtness, calculated as the revenues obtained by credit resources. But it could be interesting to define that variable in net terms, calculating it as the difference between revenues and expenditures linked to credits, *DPC2*. Within-groups and random-effects models have been applied and compared.

TABLE 4

Results: estimates

Variable	WITHIN-GROUPS			
	DEP VAR: DPC1		DEP VAR: DPC2	
	Coef.	Std. Err.	Coef.	Std. Err.
Y	---	---	---	---
GRAN	---	---	---	---
CIC	-6.3830*	3.2668	-0.8081*	0.4307
TEND	-0.9560	0.9129	-1.9539	1.5413
AHB	-0.1295*	0.0740	-0.1970***	0.0349
INV	0.2470***	0.0772	0.3365***	0.0364
PA_OR	183.6210***	29.0775	-34.3137**	13.7193
OR_PD	108.0772***	22.4850	3.6415	10.6089
Constant	-190.2099***	31.1435	34.4613**	14.6941
Breusch-Pagan Test $\chi^2(1)$		31.64***		63.45***
Hausman Test $\chi^2(7)$		31.54***		9.59

Variable	RANDOM-EFFECTS			
	DEP VAR: DPC1		DEP VAR: DPC2	
	Coef.	Std. Err.	Coef.	Std. Err.
Y	-0.0033**	0.0015	-0.0001	0.0008
GRAN	24.9723***	9.0197	9.3057**	4.7304
CIC	-0.1664	0.8431	-0.6313	0.3969
TEND	-7.0858**	3.3156	-2.1090	1.5389
AHB	-0.1511***	0.0576	-0.1972***	0.0280
INV	0.2370***	0.0704	0.3301***	0.0334
PA_OR	79.5763***	23.4698	-57.4447***	11.3576
OR_PD	89.9159***	17.2879	1.3510	8.4292
Constant	-71.1319***	24.5007	54.3452***	12.0644

*** Significance at 1% level ** Significance at 5% level * Significance at 10% level

We can notice that *GRAN* coefficient is significant in one of the models. This fact could indicate that there could be differences among big cities and the remaining local jurisdictions. At the same time, it is possible to see that the nearest of political elections does not condition local debt levels. This fact can be explained because it is possible that local governmental instability leads debt to the opposite direction. In that context, opposition party could stand budgeting approval, impeding actual government to use credits in order to finance its activity. So, we have not found evidence of political-electoral cycles.

It is possible to find several significant factors that explain local indebtedness. By one side, an upper effort in investments leads to municipalities to use credit more frequently, because of the intergenerational equity principle. By the other side, gross

saving generate lower *per head* indebtedness. It can be noticed that the indebtedness levels have decreased in time, fact which is reflected in TREND coefficient. In general, the ratios PA_OR and OR_PD present the expected sign, in the sense that the gaps which exist among different budgeting stages are relevant in order to explain the indebtedness levels.

3. Conclusions

We have analyzed what kind of factors could explain the indebtedness level of Spanish municipalities. We have followed empirical studies developed until nowadays, in Spain and other countries. Disaggregated data set of 100 medium-big size Spanish municipalities for the period 1992-1999 has been used in this study. Different panel data models have been compared, including as explanatory variables a group of socio-economic, political and budgeting factors, which are expected to have influence on municipal government indebtedness. The results of the empirical exercise have shown that local debt is explained by a combination of several factors.

Regarding socio-economic variables, we have found that income level has an ambiguous effect, and in the majority of estimations is not significant. With respect to political variables, we have not found evidence of electoral cycles. This fact could be explained by the instability of local governments, that, sometimes, can lead to credit restrictions.

However, we can find that the ability of saving or the investment effort by local jurisdiction are important factors which explain frequently the indebtedness levels. In this sense, the recent Budgetary Stability Law, according with the EU Stability and Growth Pact, will have an important influence on public local investments. Finally, we have noticed that expenditure deviation from initial budgeting values is another factor to consider, which can explain debt levels among jurisdictions.

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