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Source: *Public Choice*, Vol. 131, No. 3/4 (Jun., 2007), pp. 293-313

Published by: [Springer](#)

Stable URL: <http://www.jstor.org/stable/27698103>

Accessed: 25/02/2014 14:22

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# The effectiveness of institutional borrowing restrictions: Empirical evidence from Spanish municipalities

Fermín Cabasés · Pedro Pascual · Jaime Vallés

Received: 8 June 2006 / Accepted: 19 September 2006 / Published online: 15 December 2006  
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**Abstract** The need for restrictions on borrowing by subnational governments is a generally accepted notion that is justified both by public choice theory and by the fact that such restrictions are in force in the majority of decentralized countries. Furthermore, recent breaches of the Stability and Growth Pact of the European Union have led to the introduction of legislative tools aimed at balancing the budget at all levels of government have come to the forefront of interest in European public finance research. This paper is concerned with the financial situation and debt level of Spanish municipalities from 1988 to 2000. We have two main objectives: the first is to assess the value of mandatory limitations on municipal borrowing and past trends in the borrowing policies adopted by Spanish local authorities. The second is to develop an econometric model using panel data stratified by population size to measure indebtedness in Spanish municipalities. These measures enable us to formulate a series of hypotheses to explain municipal borrowing practices, which are then tested empirically. The evidence thus obtained appears to support the effectiveness of institutional borrowing restrictions to introduce some financial discipline in the borrowing policies adopted by local governments in Spain.

**Keywords** Municipal indebtedness · Institutional restrictions · Net savings · Debt service

**JEL classification:** H7

## 1 Introduction

Subnational borrowing is a financial mechanism that enables local governments to pass unsustainable short term tax burdens on to future generations. Within the context of Public

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Choice, the theory of fiscal illusion –debt illusion–, some authors argue that local government borrowing and spending may be more than optimal if the decisions of politicians and bureaucrats are aimed exclusively at political gain (see for example Abrams & Dougan, 1986; Misiolek & Elder, 1988; Oates, 1988). In other words, if their intention is to extend their sphere of influence as far as possible and maximize the number of votes captured. If this is their aim, they increase the provision of goods and services without raising the taxes needed to finance them, leaving the burden to future governments. As a consequence, voters systematically overestimate the benefits of deficit-financed government expenditures today while underestimating the future tax liabilities due to public debt.

The relative political weakness of subnational governments, in which party fragmentation and coalitions are more prevalent, may also lead to overborrowing. The so-called Weak Government Hypothesis, put forward in the seminal work by Roubini and Sachs (1989), has been examined in numerous studies, such as Ashworth, Geys, and Heyndels (2005) in which it is empirically tested for lower level governments.

The literature on fiscal federalism also presents various arguments in favour of the enforcement of subnational government borrowing restrictions: intergenerational equity, the preservation of long-term financial equilibrium and the coordination of fiscal policy by central governments. As a result, decentralization may be associated with disarray in local government finances, growing indebtedness, and costlier borrowing at the central and subnational levels (see Poterba & Reuben, 1999).

Changes are taking place in the institutional framework for local government management in Spain as a result of The Stability and Growth Pact (SGP) in the European Monetary Union (EMU). The Pact requires member states, Spain among them, to aim for a “close to balance or in surplus” budget so that the introduction of automatic stabilisers will not jeopardise the country’s ability to meet the requirements of the Maastricht Treaty. The SGP, like the Maastricht agreement, is a commitment by the member states of the EMU to: (a) maintain a ratio of government deficit to GDP below the reference value of 3% in the short term and the public spending budget close to balance or surplus in the medium to long term; (b) not exceed the benchmark value of 60% in the ratio of government debt to GDP. In addition, the SGP has in place a monitoring and sanctioning mechanism to deal with cases of non-compliance. The preventive aspect of the SGP was incorporated by the requirement of the Eurozone countries to present a budget stability plan (see, among others, Dafflon & Rossi (1999) and Strauch and von Hagen (2001)).

As a consequence, concern has shifted from issues relating to intergenerational equity and the financial health of public administrations towards guaranteeing the fulfilment of the macroeconomic goals set at national level. In a decentralised country such as Spain, the budgeting efforts of the central government would be of little avail if they were not backed by regional administrations. Therefore, the framework for budgetary stability in Spain has materialised into the Law for Budgetary Stability (Law, 18/2001, General de Estabilidad Presupuestaria, adopted December 12, 2001) which makes it incumbent upon all layers of government (central, regional and municipal) to draw up and return zero deficits. This law imposes stricter restrictions than those Spain is required to observe under the SGP.

The innovations brought in by this law with respect to municipal borrowing suggest that, though strict, it is well designed to involve all layers of government, and obeys the criteria proposed, among others, by Bunch (1991), Poterba (1995), Dafflon (1996), Poterba (1997), and Rossi and Dafflon (2002), for evaluating balanced budget rules and debt control.

As well as the introduction of the SGP, reform in municipal funding and the process of redistribution of powers among the decentralised Spanish authorities create a new institutional scenario for municipal authorities which calls for an assessment of the financial situation of

Spain's municipal treasuries. Two issues motivate our research on municipal borrowing. First, we propose a new approach to the subject, since no Spanish researchers have as yet presented empirical models for analysing municipal debt. Second, the model we use varies in specification from those described in the existing literature.

Are borrowing restrictions effective? What types of restrictions are most effective? Does fiscal behaviour change significantly as a result of borrowing restrictions? Does it reduce the fiscal illusion effect? The purpose of this paper is to examine the financial and borrowing situation of Spanish municipalities for the period 1988–2000. The analysis was stratified by population size, in order to identify any relevant across strata differences in borrowing habits that might be related to the different revenue sources or different degrees of power resulting from the allocation of competencies to sub-national authorities.

The first of our two aims is to analyse municipal debt processes and the effectiveness of mandatory borrowing constraints, while checking to see whether current legislation takes into account the theoretical arguments in favour of borrowing under certain constraints. The second is to apply an econometric approach to analyse municipal borrowing in Spain, by constructing a model using panel data for different strata of population. We present our hypotheses on municipal borrowing and then test them empirically, in this case limiting the study period to years for which we have data on budget outcomes. We specifically aim to discover whether the legal constraints on municipal borrowing introduced over the study period were effective in imposing some degree of financial discipline on borrowing policies.

The remainder of the paper is organized as follows. In Section 2 we begin by describing the situation with regard to municipal borrowing in the Spanish public sector as a whole and then based on an analysis stratified by population size. We then evaluate the design of the legal constraints for their relevance to the various reasons involved in the use and control of sub-national debt. In Section 3, we examine the effectiveness of the restrictions introduced throughout the period of interest. In Section 4 we give the specification of the econometric model, and explain how the data are standardised in order to obtain time series data for comparison across the population strata. We begin this section with a brief presentation of the various hypotheses to be tested in the empirical study; we then give the specifications of the model and discuss the results obtained in our empirical study. Section 5 contains our main conclusions.

## 2 An evaluation of municipal borrowing restrictions within the general context of public sector indebtedness in Spain

The trend in total accrued public authority debt expressed as a percentage of GDP can be seen in Table 1. These figures show that, after a marked increase in the first few years of the economic crisis of the nineties, from 1994 onwards, municipal debt began a slight downward trend relative to GDP. The effects of the decentralisation of Spanish government are to be seen in the change in the sub-national borrowing pattern. Regional indebtedness grew from 1.1% to 6.3% of GDP between 1988 and 2000, while municipal indebtedness showed a much smaller increase from 1.7% to 2.4% of GDP. In spite of this, between 1988 and 2000, at 15% of the total public debt, sub-national debt is relatively low, with local debt ranging between 4% and 5.5% of total public debt.<sup>1</sup>

<sup>1</sup> Local administration in Spain is divided into Provinces, Municipalities, Comarcas (municipal groupings), Mancomunidades (municipal commonwealths) and Metropolitan Areas. This paper refers only to Municipalities.

Table 1 Distribution of indebtedness relative to GDP (%)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
Central government	37.3	36.8	38.9	37.3	39.2	49.7	51.3	53.3	57.1	55.7	54.0	52.9	51.3	47.3
Social security adm.	0.6	0.5	0.5	0.6	0.5	0.5	0.5	0.6	0.6	0.5	0.3	0.3	0.3	0.5
Regional governments	1.1	1.4	1.9	2.7	3.6	4.5	5.3	5.9	6.4	6.7	6.6	6.4	6.3	4.5
Local councils	3.2	4.9	4.2	4.1	3.9	4.3	4.2	4.1	4.1	3.7	3.6	3.5	3.3	3.9
Municipalities	1.7	1.8	2.1	2.4	2.6	2.8	2.9	2.7	2.7	2.7	2.7	2.6	2.4	2.5
Total	41.9	43.6	45.1	44.6	47.1	59.0	61.3	63.9	68.1	66.7	64.7	63.4	61.1	56.2

Source. Calculations by the authors, from data supplied by the Banco de España and the Studies Department of the Banco de Crédito Local

Moreover, as Table 2 shows, debt is concentrated in larger municipalities. Local councils with populations of over 100,000, that is, less than 1% of the total, account for between 53–64% of all municipal debt, in contrast to those with populations of less than 20,000 which, while representing over 91% of the national total, account for only 15–23% of total municipal debt.

Having completed a brief overview of Spanish municipal borrowing patterns, we must now make a deeper, theoretical, analysis of the mechanisms available for conditioning the borrowing policy of sub-national governments, in order to evaluate existing institutional restrictions in Spanish municipal regulations.

## 2.1 The main strategies for controlling subnational debt

The main developments in the research on the impact of institutional restrictions on municipal borrowing is to be found in the works of Heins (1963), Mitchell (1967), Pogue (1970), McEachern (1978), Farnham (1985), Epple and Spatt (1986), Bayoumi and Eichengreen (1994, 1995), Dafflon (1996), and Kiewiet and Szakaly (1996), Ter-Minassian and Craig (1997), Poterba and Reuben (1999), Kopits (2001), Kennedy and Robbins (2001), and Rossi and Dafflon (2002), to name only a few

The control mechanisms placed on municipal borrowing are assessed for their potential to influence and modify sub-national borrowing policies. We will, therefore, begin by defining the control strategies involved in budgetary restrictions affecting any government:

$$CE + KE + FE = CR + KR + FR \quad (1)$$

where the second initial stands for either expenditure (E) or revenue (R), and the first denotes the type of expenditure or revenue, i.e., current (C), capital (K) or financial (F).

Expression (1) can be broken down as follows:  $CE = IE + PCE$ , where IE is interest charges and PCE is primary current expenditure;  $FR = D + OFR$ , where D is debt revenue and OFR other financial revenue;  $FE = AD + OFE$ , where AD is repayment charges and OFE is other financial expenditures.

When OFE and OFR are omitted as being barely relevant, and the terms are reorganized, we have:

$$D = (IE + AD) - (CR - PCE) + (KE - KR). \quad (2)$$

In short, this shows that debt revenue is a function of the debt load ( $IE + AD$ ), primary current savings ( $CR - PCE$ ), and the co-funding effort ( $KE - KR$ ) for the investment required of sub-national governments. Therefore, the main potential strategies for controlling sub-national borrowing policies can be summed up in three categories:

- *Policies affecting the debt load.* There are two strategies in this category. Those that limit borrowing in order to reduce the debt load in subsequent years, and those that place direct control on the current financial load.
- *Policies affecting current primary savings.* These may exert their effect on the current expenditure side, by restricting borrowing exclusively to finance capital expenditure,<sup>2</sup> or

<sup>2</sup> It should be noted that the strategies cited in Poterba (1995b), which is an analysis of how the capital budget isolated from current expenditure, and constitutional borrowing restraints, can alter the optimum level of capital and current spending. There are also reports in the literature of how this type of legislation is affected

**Table 2** Distribution of municipal indebtedness by population size (%)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
Pop. < 5,000	4.2	4.3	4.6	5.0	5.1	5.2	5.6	5.8	5.9	5.9	6.0	6.3	6.6	5.4
5,001 < Pop. < 10,000	4.0	4.4	4.7	5.3	5.5	5.5	5.7	5.8	5.8	5.7	5.9	6.0	6.3	5.4
10,001 < Pop. < 20,000	7.2	7.8	8.2	9.0	9.2	9.1	9.2	9.4	9.6	9.6	10.0	10.2	10.6	9.2
20,001 < Pop. < 50,000	10.6	11.3	11.2	11.7	11.7	11.8	12.0	12.1	12.1	12.5	12.9	12.9	13.4	12.0
50,001 < Pop. < 100,000	9.1	9.1	9.4	9.4	9.4	9.7	9.9	9.7	9.7	9.9	9.9	10.0	10.2	9.7
100,001 < Pop. < 500,000	26.8	26.8	24.7	24.0	23.6	23.9	24.8	24.9	25.6	27.0	27.5	27.5	27.5	25.7
500,001 < Pop. < 1,000,000	10.1	11.3	11.9	10.6	10.1	10.4	9.9	10.2	10.2	10.3	10.4	10.5	10.8	10.5
Pop. > 1,000,001	28.1	25.0	25.2	25.1	25.4	24.5	23.0	22.0	21.2	19.1	17.3	16.6	14.8	22.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source. Calculations by the authors, from data supplied by the Studies Department of the Banco de Crédito Local

**Table 3** Strategies and restrictions

Strategy	Restrictions applied in Spain
Debt charge limit	Authorisations for short-term borrowing Control of competencies Limit on net savings to current revenue Scenarios of municipal budget consolidation >200,000 pop.
Current savings	Use of borrowing for investment expenditure Level of fiscal autonomy
Co-funding effort	Current and capital grants from central government

Source. Compiled by the authors

on current revenue, by increasing the level of fiscal effort and fiscal autonomy assigned to sub-national governments.

- *Policies affecting the co-funding effort.* These include two options, one is to reduce the percentage of municipal co-funding of investments, the other is to reduce capital expenditure by fixing a maximum repayment period and requiring municipal authorities to fix a repayment-tax plan, in other words, by adding extra “costs” to investment plans.

## 2.2 Rules for controlling municipal borrowing in Spain: an assessment

Which of the above strategies have been selected by Spanish legislation to deal with municipal debt? Over the study period, there have been several modifications to the rules for controlling borrowing, especially since 1996. This has greatly increased the difficulty of our analysis.<sup>3</sup>

All three of the theoretical regulatory strategies described above are used to control local debt in Spain as shown in Table 3. The borrowing authorization requirements, the limit on net savings, and budgetary consolidation scenarios, affecting jurisdictions with larger populations, are all policies with an impact on the debt load. Earmarking borrowed income to fund investment and the broad range of freedom for municipal tax policy are aimed at controlling current savings. Finally, transferred income levels are set by the national government, thereby impacting on the co-funding effort.

The main institutional limits on municipal borrowing over the study period (1988–2000) are summarised in Table 4. This table shows that external restrictions on borrowing concern foreign currency operations, public debt offerings and the level of certain financial ratios.<sup>4</sup> There is also a ceiling on short-term borrowing, and on emergency borrowing operations.

Nevertheless, there remain certain shortcomings in the design of municipal borrowing restrictions in Spain:

by strategic behaviour. In many cases, moreover, capital spending may generate a carry over of current expenditures to subsequent cycles, Goetz (1977).

<sup>3</sup> A detailed explanation of municipal borrowing rules and the modifications they have undergone can be found in Ezquiaga (2000) and Monasterio (2000). As these authors explain, in spite of repeated tightening and the fact that many operations required central government approval, the borrowing restrictions set up by the Local Public Finance Law (Law, 39/1988, Reguladora de las Haciendas Locales, LRHL, 28 December, 1988) have failed over the years to curb the increase in funding with debt revenue.

<sup>4</sup> Limit on legal net savings and the ratio of outstanding debt to current revenue.



**Table 4** Legal restrictions on the use of municipal debt

<b>1 Prior requisites:</b> Targeted, except under certain circumstances, to finance capital expenditure Budget must be approved for the current cycle by municipal council vote.			
<b>2. External approval</b>			
	<i>Cases in which approval is required</i>	<i>Conditions for approval</i>	<i>Remarks</i>
<i>General regulations</i>	Negative legal net savings in the budget balance	A plan must be in place to restore current budget balance within a maximum of 3 years	1. Temporary regime: limits of -1.5% and -0.75% of current revenues for 1999 and 2000 respectively. 2. Approval will not be needed for an operation aimed at reducing capital spending or risk.
	Outstanding debt (short and long term) over settled current revenue exceeds 110%.	A plan must be in place to bring indebtedness within the 110% limit	
	By nature of operation: • Foreign currency operations. • Public debt offerings		
<i>Law of Budgetary Stability</i>	Stability objective is met when the budget is balanced or in surplus.		
<i>Municipalities with pop. over 200,000</i>	Operations will not require approval, provided that the municipality is in a scenario of convergence with the yearly debt objectives and three year budgetary deficit objectives agreed with the financial authority, and supervised by the Ministry of the Economy and Treasury.		
<b>3. Maximum limits:</b>			
<ul style="list-style-type: none"> <li>• Each year the State Budgetary Laws may place a borrowing restriction on local authorities when circumstances advise such a measure for the sake of the general economic policy.</li> <li>• <i>Short-term borrowing:</i> total short-term debt must not exceed the permitted maximum of 30% of current revenue for the previous fiscal year.</li> <li>• <i>Emergency borrowing:</i> the annual total must not exceed 5% of current revenue, and time period adjusted debt service must not exceed 25% of current revenue of the budget.</li> </ul>			
<b>4. Informing the Treasury:</b> the Treasury must be informed of any operations that have not been formally submitted for approval according to regulations, and of any operations approved at regional government level.			

Source: Compiled by the authors.

- The upper limit of 3% deficit or 60% debt as a share of GDP should be spread over the three tiers of government,<sup>5</sup> in proportion, say, to their investment commitments, after meeting current national stability requirements and creating reserves for the future.<sup>6</sup>
- There is a lack of consensus on definition in the measures used to calculate control ratios. There are, for example, various ways of calculating the yearly debt servicing rate and investment funding is an ambiguous concept that may even include certain items of current expenditure (Musgrave, 1959: 599–600).

<sup>5</sup> As indicated earlier, these are the limits set by the Treaty of Maastricht, Article 104(2), or more precisely by the Protocol no. 5 on the excessive deficit procedure annexed to this Treaty.

<sup>6</sup> As far as we are aware, the first case of debt sharing between central and local tiers of government was that of Belgium, as described by Gilliams (1990). Later, Balassone, and Franco (2000) give a more detailed account of the effect of the Growth and Stability Pact on decentralised government in each member state, touching on both the theoretical and empirical sides of the issue.

**Table 5** Municipalities by population size

Size of population	Municipalities	%	Population	%	Expenditure*	%
Pop. < 1,000	4,927	60.81	1,583,554	3.99	1,485.31	5.05
1,001 < Pop. < 5,000	2,032	25.08	4,563,157	11.49	3,303.39	11.22
5,001 < Pop. < 10,000	519	6.41	3,534,253	8.90	2,482.76	8.44
10,001 < Pop. < 20,000	327	4.04	4,541,265	11.43	3,404.92	11.57
20,001 < Pop. < 50,000	181	2.23	5,243,892	13.20	3,945.41	13.41
50,001 < Pop. < 100,000	62	0.77	4,115,861	10.36	2,769.71	9.41
100,001 < Pop. < 500,000	48	0.59	9,178,572	23.11	6,554.54	22.27
500,001 < Pop. < 1,000,000	4	0.05	2,572,785	6.48	1,813.81	6.16
Pop. > 1,000,001	2	0.02	4,387,087	11.04	3,669.31	12.47
Total	8,102	100.00	39,720,426	100.00	29,429.13	100.00

Source. Directorate General for Community and Regional Funding

\* Budget 2000 in millions of euros

- There is a variety of mechanisms for deterring the median voter from reverting investment costs on to future generations through borrowing.<sup>7</sup> Apart from the existing practice of earmarking debt revenue, another option would be to fix maximum repayment periods adjusted to the life cycle of the investment project, or the demands of depreciation-taxation plans.
- There is not sufficient justification for the establishment of a maximum debt level. Why fix this at 110% of current revenue instead of another level? What happens when there is a decline in revenue after a service that has been self-funded with tariffs is later contracted out? Inadequate debt limits will always prove detrimental to municipal treasuries.

### 3 Analysis of the impact of the different municipal borrowing restrictions

Here we examine the effectiveness of the various legal constraints on municipal borrowing. The data we use for this analysis are municipal budget balances aggregated by economic classification of expenditure for Spanish municipalities, from 1988 to 2000.<sup>8</sup> From these data it is not possible to distinguish between short-term and long-term debt, nor is it possible to isolate debt repayment from debt refinancing. However, we have succeeded in working with various municipal population strata, the main characteristics of which are summarised in Table 5.

Table 6, which displays borrowing trends, shows a decline over the sample period in annual municipal debt revenue as a share of municipal GDP indirectly estimated for each category of population size. Three stages can be appreciated: 1988–1991, when revenue from this source stood at 1.1% of estimated municipal GDP; 1992–1997 when there was an average drop of 0.46 percentage points; and, finally, 1998 to 2000, when there was a further decline in municipal indebtedness which took it to an average of 0.38% of estimated municipal GDP. Note the difference in the performance of larger-sized municipalities, whose levels are much higher in the first period and continue above those of the rest throughout.

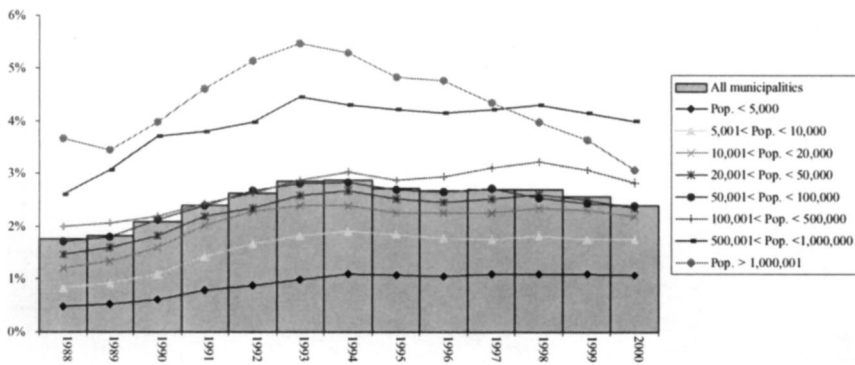
<sup>7</sup> On this point, see Inman (1982, 1990), Abrams and Dougan (1986), Inman and Fitts (1990) and Schultz (1995).

<sup>8</sup> Aggregate data on the various budgetary chapters and other information relating to population size categories are available from the authors upon request.

**Table 6** Debt revenue share of estimated municipal GDP (%)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
Pop. < 1,000	0.15	0.15	0.17	0.21	0.25	0.21	0.16	0.23	0.20	0.21	0.15	0.17	0.15	0.18
1,001 < Pop. < 5,000	0.21	0.47	0.39	0.38	0.30	0.34	0.42	0.25	0.30	0.25	0.30	0.23	0.22	0.31
5,001 < Pop. < 10,000	0.32	0.47	0.71	0.63	0.46	0.35	0.64	0.22	0.28	0.37	0.40	0.28	0.29	0.42
10,001 < Pop. < 20,000	0.54	0.72	0.65	0.69	0.71	0.46	0.85	0.44	0.48	0.45	0.47	0.35	0.37	0.55
20,001 < Pop. < 50,000	0.80	0.93	1.03	0.94	1.06	0.59	0.73	0.39	0.37	0.72	0.48	0.35	0.41	0.68
50,001 < Pop. < 100,000	0.93	0.98	0.98	0.93	0.82	0.56	0.65	0.46	0.57	0.66	0.46	0.30	0.34	0.67
100,001 < Pop. < 500,000	1.02	1.04	1.06	0.90	0.76	0.75	0.86	0.58	0.79	0.95	0.51	0.34	0.42	0.77
500,001 < Pop. < 1,000,000	1.73	2.43	2.02	1.48	1.32	0.75	1.11	1.17	0.77	1.47	1.09	0.41	1.05	1.29
Pop. > 1,000,001	2.75	2.44	2.74	3.10	0.83	1.02	1.37	0.89	0.50	0.27	0.33	0.38	0.05	1.28
Total	1.03	1.12	1.15	1.10	0.75	0.61	0.81	0.52	0.52	0.63	0.47	0.32	0.36	0.72

*Source.* Calculations by the authors, from data supplied by the Directorate General for Coordination with the Regional Treasuries



Source: The authors, from data supplied by the Studies Department of the Banco de Crédito Local.

**Fig. 1** Debt stock share of estimated municipal GDP (%)

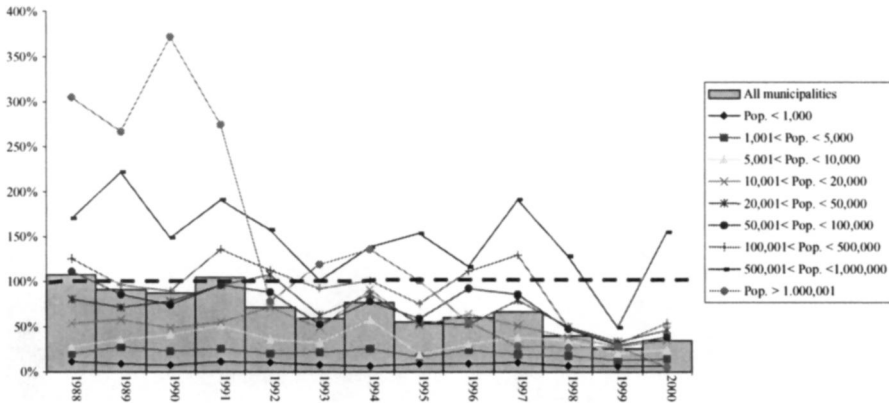
Figure 1 shows the changes in debt revenue and debt servicing costs are reflected in debt stock, which in its ratio to GDP moves through three stages (Figure 1). In the first, which covers the period 1988 to 1993, there is marked growth in stock. The second is a stage of stability in which stock reaches its maximum ratio. Finally, in the third phase, 1995 to 2000, values remain stable but slightly lower. Again, the overall pattern is broken by the population category of above 500,000, where debt stock levels are higher.

Over the study period, borrowing operations stretching over more than one budget cycle were subject to restrictions that we will now detail. First, borrowed income must be used exclusively to cover investment costs (Figure 2). Second, an upper threshold or cap was placed on debt servicing costs relative to current revenue, beyond which prior approval was required from the national government (Figure 3).<sup>9</sup>

As far as the effects of the borrowing policy on capital expenditures is concerned (Figure 2), it can be seen that during the budget cycles from 1988 to 1991, the ratio of debt revenue to investment expenditure is very high, that is, over 100% for more than one cycle, though it later undergoes a strong and persistent decline. Note also that there is a similar temporary trend in debt repayment, which may mean that most of the borrowing that took place over the study period was chiefly used to pay off outstanding debt, a result of a major debt re-negotiation process that took place, primarily, during the 1990 and 1991 fiscal years, and also, though to a lesser extent, throughout 1994 and 1997.

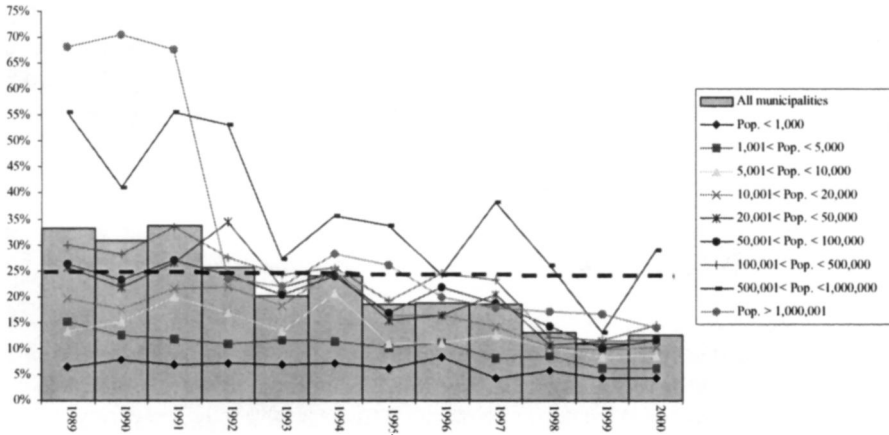
Municipal borrowing restrictions have traditionally been based on a unique risk or solvency indicator, calculated from the ratio between debt servicing costs and the current revenue for the previous fiscal year. Figure 3 shows that, within an overall downward trend, values are

<sup>9</sup>Over the period 1988–1998 this limit was 25% of current revenue. From 1998 the limit was set with respect to the proportion of net savings to current revenue, as reflected in block 2 of Table 3, but the previous limit was maintained on current revenue for short-term and emergency borrowing, shown in block 3 of Table 3. This was implemented through Law 50/1998, which modified the regulations on local borrowing constraints. The new article 54 is particularly relevant, since it introduces stricter conditions for new long-term borrowing. New long-term borrowing without prior official authorization (The Ministry of Economy and Treasury or The Autonomous Community) will no longer be allowed whenever budget returns show negative net savings (formerly below –2% of current revenue). Note that, as explained in Monasterio (2000), the two limits are related. Thus, although both are in operation, the one affecting net saving, being more stringent, replaces the 25% limit.



Source: The authors, from data supplied by the Directorate General for Coordination with the Regional Treasuries.

**Fig. 2** Debt revenue share of real investment (%)



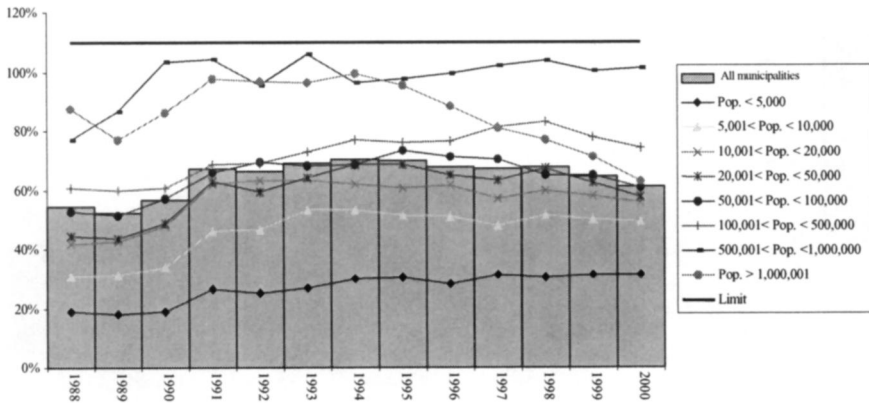
Source: The authors, from data supplied by the Directorate General for Coordination with the Regional Treasuries. Note that the year 1988 is lost, when this variable is lagged by one period.

**Fig. 3** Debt service charges relative to current revenue in the previous fiscal year (%)

generally high, in excess of 22.5% on average, failing to keep within the 25% limit in the period 1990–92, and rising above 30% in three budget cycles. This illustrates the difficult financial situation that some municipalities in Spain have had to face.

In our view, however, this indicator does not adequately reflect financial risk in municipal borrowing policy. If we bear in mind that municipal borrowing potential is necessarily linked to the council’s ability to pay off debt with its own revenue,<sup>10</sup> an indicator is needed to reflect

<sup>10</sup> By current own revenue we mean that derived from direct and indirect taxes, user charges and real estate revenue. We do not include grants, a quarter of which are earmarked, while the remaining 3/4 are distributed to finance the current expenditures required to deliver minimum standard services, such as refuse collection, drainage, street lighting, etc., (Law 7/1985, Reguladora de las Bases del Régimen Local, LBRL, adopted April 2, 1985). See Monasterio and Suárez-Pandiello (2002).



Source: The authors, from data supplied by the Directorate General for Coordination with the Regional Treasuries.

**Fig. 4** Debt stock relative to current revenue (%)

the balance between debt service and own revenue in the previous fiscal year. This actually reveals the credit standing of Spanish municipalities to be even worse than described above.<sup>11</sup> Due, therefore, to the high interest rates and economic recession of the early nineties, and to their limited fiscal capacity, Spanish municipalities can be seen to have run up excessive debt during part of the study period.

The combination of the two limits (borrowing only for investment purposes, and upper limit of the debt load) shows that municipal governments need to generate sufficient current savings to cover a major part of their capital expenditure, which probably largely explains why the 25% limit of the capital charge relative to current revenue was later replaced with a limit relative to current net savings, that is, the amount saved after deduction of repayment costs.<sup>12</sup>

From the figures in Table 7, all that we can conclude is that larger municipalities have a tendency to realise lower net savings to current revenue than smaller ones, but even in this category the situation has improved in recent years.

The above restrictions affect the borrowing policy each year, but not the debt stock. To control the debt stock level, therefore, after several modifications, municipal borrowing rules now include a new solvency or financial risk indicator (Figure 4), to capture the ratio of debt stock to current revenue. The figure shows that, in spite of the slight upward trend of this indicator, it never reaches the legal maximum of 110% mentioned in Table 3, block 2, under general regulations number 2, though it does increase with population size. In other words, municipal authorities with larger populations tend to have less room for manoeuvre than those with smaller populations, with respect to borrowing limits.

Summing up, we can say that the financial situation at municipal level in Spain, especially in the low population strata, gives no reason for concern, either in terms of annual debt or the level of total debt accrued and nor, therefore, in terms of most of the mandatory restrictions currently in force. The same cannot be said when it comes to net savings, where, on average, debt redemption results in dissaving, due in part (though it is difficult to say exactly how far) to

<sup>11</sup> If grants are excluded from the revenue on which this indicator is measured, capital charges now emerge at 22% to 35% of that revenue.

<sup>12</sup> See endnote 9.

Table 7 Approximate net savings relative to current revenue (%)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Average
Pop. < 1,000	29.5	27.1	29.1	18.8	23.3	19.4	21.7	20.1	20.7	21.1	18.1	19.7	18.2	22.1
1,001 < Pop. < 5,000	14.6	20.0	18.3	10.4	14.7	10.8	13.4	11.9	11.7	16.1	15.5	15.8	15.9	14.6
5,001 < Pop. < 10,000	15.3	14.7	9.8	-1.3	7.4	5.8	4.1	12.3	10.4	10.1	9.6	13.6	11.9	9.5
10,001 < Pop. < 20,000	6.8	5.9	7.4	-3.2	-0.6	3.5	-1.8	5.7	4.8	10.4	12.4	12.5	11.9	5.8
20,001 < Pop. < 50,000	0.8	4.7	-1.7	-10.4	-10.2	-1.2	-2.9	5.2	4.8	3.8	9.4	10.6	11.2	1.9
50,001 < Pop. < 100,000	-5.8	-0.6	1.4	-6.6	-3.0	0.1	-0.2	2.2	-2.4	5.2	8.7	11.4	10.8	1.6
100,001 < Pop. < 500,000	-5.7	-3.0	-2.9	-12.4	-4.1	-2.2	-2.8	4.1	-1.0	0.6	11.4	11.5	5.5	-0.1
500,001 < Pop. < 1,000,000	-16.9	-21.4	-14.5	-24.7	-15.5	-2.7	-3.1	-1.2	0.6	-10.5	-1.2	10.7	-5.8	-8.2
Pop. > 1,000,001	-48.3	-34.6	-33.0	-37.7	4.4	9.8	4.2	7.8	14.4	16.3	18.6	19.5	17.0	-3.2
Total	-7.4	-3.1	-2.8	-11.9	-0.1	3.4	1.6	6.5	5.9	7.2	11.7	13.5	10.4	2.7

Source. The authors, from data supplied by the Directorate General for Coordination with the Regional Treasuries

debt refinancing operations. Generally speaking, however, the trend appears satisfactory, with a much slower increase in municipal indebtedness in recent years and an improvement in the financial solvency of Spanish municipalities, reflected in their scores on the financial solvency indicators applied in national regulations. Finally, however, in spite of the favourable overall impression, it has to be said that a large number of Spanish municipalities fail to adhere to mandatory borrowing limits, because they do not use debt strictly for the purpose of covering capital expenditure, nor do they keep within debt service limits.

#### 4 An econometric model for municipal indebtedness

One of the problems encountered while undertaking this study arose from the diversity of the universe analysed, quite apart from the usual limitations of econometric studies based on aggregate time series data. However, this problem is partially overcome by working with panel data, which permits the use of fewer periods, while at the same time enabling us to observe how municipal behaviour patterns vary with the size of the population.

Two remaining problems, however, are that the data are heterogeneous and it is therefore difficult to make comparisons across different sizes of population and across budget cycles. These problems are overcome on the one hand by ensuring the homogeneity of the data by using only information supplied by the Directorate General for Coordination with Local Regional Treasuries. Furthermore, we standardise the data in percentage terms of estimated municipal GDP, thus enabling their comparison.

To check the robustness of the results yielded by the econometric model, we perform estimations using variables standardised relative to non-financial revenue stratified by population. Though this procedure features the disadvantage that the level of non-financial revenue depends on the size of the population, it does, however, enable us to check the sensitivity of the significance parameter.

##### 4.1 Hypotheses and variables for the model

We will now detail the hypotheses we aim to test, a summary of which is given in Table 8. Specifically, we aim to ascertain how far debt use falls within theoretical premises and mandatory restrictions. For this, we put three main hypotheses to empirical testing:

- H1. Borrowing is used mainly to finance municipal investment.
- H2. The cap on the financial charge on current revenue lagged one year is effective in containing municipal debt.
- H3. Borrowing restrictions in the event of negative net savings are effective in containing municipal debt.

Finally, we introduce a series of control variables. In the following table we summarize the variables used to test each hypothesis and the sign they are expected to take in each case. Their main features are described in detail below.

- (a) *Municipal borrowing (DEBT)*. A variable that stands for municipal borrowing and is defined as the ratio of debt revenue to municipal GDP. It captures the yearly total flow of financial resources to municipalities from sources other than taxes or transfers.
- (b) *Intergenerational equity (INV)*. This is intended to capture whether indebtedness is a result of carrying forward real investment costs from one year to subsequent years, in order to spread the costs over the different generations that stand to benefit from them.



**Table 8** Expected signs of the variables

Symbol	Hypothesis	Variable	Expected sign
Endogenous variable			
DEBT	“Proxy” for municipal borrowing	Ratio of debt revenue to municipal GDP	
Main hypotheses			
INV	Intergenerational equity	Ratio of real investment to GDP	+
LRHL(-1)	Impact of control mechanisms (maximum legal borrowing limit)	Ratio of debt service to current revenue in the previous year per size of population	-
SAVEN	Co-funding capacity	Net saving in debt servicing costs	-
Control Variables			
DMUNX ( $X = 1, 2, \dots, 7$ )	Taxation capacity, compulsory competencies, services and transfer costs (Level of competencies)	Stratified dummy variables	Undetermined (-)
DTEN	Municipal borrowing trend (1988–2000)	Increasing qualitative variable (1, 2, ... $t$ )	-
TAX	Fiscal responsibility	Ratio of own tax revenue to GDP	Undetermined
GDPpc	Relative wealth	Municipal GDP per capita	+

This would accord with theories on intergenerational equity and mandatory provisions. This variable is constructed from the ratio of real investment to municipal GDP. A positive coefficient is expected.

(c) *Maximum legal borrowing limit (LRHL(-1))*. The purpose of this variable is to capture the effectiveness of the maximum limit established for debt use. For each size of population, we determine the ratio of debt service to current revenue in the previous year. If the limit is effective, it is reasonable to expect a negative coefficient on this variable, in other words, the higher the ratio of debt servicing costs to current revenue in a given municipality in a given year, the lower its indebtedness in the following year; this being an indicator of the financial risk carried by each size of population. Nevertheless, the sign of the coefficient may change if the municipality incurs new debt in the year following.

(d) *Co-funding capacity (SAVEN)*. We aim to establish how far an increase in net saving can help to reduce the need for borrowing in order to fund investments. We will test this hypothesis by comparing net savings in debt servicing costs to municipal GDP. The coefficient is expected to be negative, since greater co-funding potential implies less need to resort to borrowing as a source of funding.

We also introduce a series of control variables, which we have chosen to represent institutional, fiscal or economic conditions that might have a strong impact on fluctuations in debt levels. These variables and the sign of their correlation to borrowing are detailed below.

- (e) *Level of competencies (DMUNX)*. The purpose here is to determine the impact of municipal debt on variations in municipal borrowing behaviour across different sizes of population, contingent on their different levels of competencies,<sup>13</sup> capacity for taxation and other characteristics. To capture this institutional factor, we will use a series of dummy variables that take a value of one for each category of population size and zero for the rest, except for the over 500,000 category, in order to avoid problems of multicollinearity. The expected sign is ambiguous.
- (f) *Trends in the funding system (DTEN)*. Here we propose to find out whether there is an upward or downward trend in municipal indebtedness over the estimation period. We will try to capture this effect by means of a qualitative variable that takes value of 1 for the first fiscal year of the period, 2 for the second, and so on. A priori, the coefficient can be expected to be ambiguous, though there are two factors that might lead us to expect a negative sign. The first of these relates to successive amendments to the municipal funding system, which have rationalised debt control and increased the non-financial resources available to local councils. The second is growing concern over the financial situation of sub-national authorities, especially since acquiring the commitments implied in the signing of the Maastricht Treaty, which leads us to expect a downward trend in borrowing.
- (g) *Fiscal responsibility (TAX)*. Aimed at measuring the effect of higher own tax revenue on municipal indebtedness in order to test the effectiveness of fiscal responsibility as a tool for controlling borrowing. We will test this hypothesis by finding the ratio of own tax revenue (user charges, direct and indirect taxes) to municipal GDP.<sup>14</sup> A negative sign is expected in this case, since the lesser (greater) the proportion of internal taxation, the lesser (greater) the application of the power of taxation, which would force the municipality to resort to other extraordinary revenue sources, that is, to increase borrowing as an alternative means of funding.<sup>15</sup>
- On the other hand, higher tax revenue may reflect a greater ability to repay debt, which could bring advantages in terms of access to borrowing, with debt servicing costs lower than taxation costs, in which case the coefficient would be positive. Given these contradictory effects, expectations are ambiguous when it comes to the sign of the coefficient of correlation between internal tax revenue and debt.
- (h) *Per capita income (Municipal GDPpc)*. Given that income has a positive impact on demand for public spending, we will see how municipal GDP per capita relates to borrowing. We aim to establish whether funding systems are failing to cover the main demands on public spending in areas with high levels of municipal GDP per capita. In other words, we will try to detect whether the funding system lacks sufficient flexibility to be able to adapt to varying preferences. We expect a positive coefficient on this variable, given the rigidity of the current local funding system.

<sup>13</sup>Note that legal regulations establish minimum compulsory expenditure responsibilities according to the size of population (LBRL law) and also powers of taxation that increase with the population size (LRHL law), since the municipal tax rate structure is an increasing function of population size.

<sup>14</sup>See endnote 13.

<sup>15</sup>It should be pointed out that this result is related to the hypothesis of fiscal illusion, since this variable is very highly correlated with current grants. Though alternative tests were performed using payroll expenditure, costs of current goods and services, the sum of these two, and current transfers, all relative to GDP, there were no improvement in results.

#### 4.2 The model specification and main findings from the estimation

Having established the hypotheses we wish to test, we will now specify the model in detail. Our purpose is to ascertain whether trends in municipal borrowing are related to the investment commitment of each local council, we aim to assess the impact of institutional borrowing control mechanisms on debt service and savings. Our model for the panel data estimation is as follows:

$$DEBT_{it} = D(INV_{it}, LRHL(-1)_{it}, SAVEN_{it}, DMUNX_{it}, DTEN_{it}, TAX_{it}, GDPpc_{it}) \quad (3)$$

where:  $i$  = municipal population size;  $t$  = year (1988–2000);  $DX$  = dummy variable; and  $X(-1)$  = the lagged indicator variable.

The results of the estimation, summarised in Table 9, indicate that municipal borrowing is related to a combination of the proposed variables. The one that captures the borrowing-investment relationship (namely,  $INV_{it}$ ), and the one associated with maximum borrowing limits ( $LRHL(-1)_{it}$ ) prove significant and have the expected sign. Investment emerges as one of the main reasons for borrowing. The maximum legal borrowing limit, meanwhile, has the expected negative coefficient, therefore the empirical evidence demonstrates the institutional borrowing restriction to be effective.

The negative correlation coefficient between net saving and municipal indebtedness shows that local councils that adopt a policy of restraint in current spending either obtain higher levels of current revenue (own or grant), or are more adept at planning the servicing of their debt, have greater funding capacity, and have less need to resort to borrowing in order to fund their investment projects.

Turning to the control variables, among the institutional factors, note the significance of the time variable  $DTEN_{it}$ , which indicates a clear downward trend in municipal borrowing, and the variable for economic conditions and fiscal powers, which reveals variations across different sizes of population. It is worth mentioning that the groups with greatest funding requirements are those with populations of over 100,000, followed by those with populations of between 1,000 and 20,000. Meanwhile, municipalities with populations of under 1,000, and those with populations between 20,000 and 100,000 are in a better position in terms of their borrowing needs.

The fact that local tax revenues prove significant and show a positive coefficient suggests that there is no substitution relationship between the two revenue sources (tax and debt).<sup>16</sup> Municipalities that levy more taxes tend to borrow more. This appears to suggest that they stand at an advantage when it comes to accessing debt.

The empirical findings for the per capita income variable ( $GDPpc_{it}$ ) show that municipal debt is a response to local spending pressure resulting from the fact that local public goods are normal goods and their income elasticity of demand is positive. Municipalities cannot meet this demand with non-financial revenue, because their taxation systems are too rigid to adapt to changes in municipal income. To address potential problems with this variable, and in order to confirm the findings based on the econometric model, we re-estimated it, using variables adjusted to non-financial revenue in each category of population size. This failed

<sup>16</sup> See Bonner (1972).

**Table 9** Models for municipal indebtedness, 1988–2000

	Model standardised by estimated income stratified by population		Model adjusted to non-financial revenue stratified by population	
	Coefficient	<i>t</i> -statistic	Coefficient	<i>t</i> -statistic
INV	0.3705989070	3.818573**	0.3716545638	4.497942**
LRHL(−1)	−0.0000492118	−2.406318*	−0.0008542130	−1.680375*
SAVEN	−1.0011681128	−17.39149**	−0.9569622903	−17.12314**
DMUN1	−0.0041833294	−2.392185**	−0.1017996599	−2.136868**
DMUN2	−0.0035556266	−2.906097**	−0.1276403060	−3.987451**
DMUN3	−0.0036094498	−3.701289**	−0.1327354553	−5.226054**
DMUN4	−0.0037668898	−4.803066**	−0.1330008062	−5.710530**
DMUN5	−0.0045269094	−6.704109**	−0.1543091825	−6.025576**
DMUN6	−0.0042214489	−6.272866**	−0.1441115231	−5.933779**
DMUN7	−0.0026080451	−3.726676**	−0.0881385248	−4.930282**
DTEN	−0.0009075498	−2.664434**	−0.0216356879	−2.469655*
TAX	0.4165379067	4.384617**	0.8233797740	2.996739**
GDPpc	0.0000000059	2.096782*	0.0000001463	2.026195*
C	−0.0056803343	−1.412783	−0.385328080	−2.053623*
Observations	110		110	
Mean of dependent variable	0.00667		0.17048	
Variance	0.00000251		0.00161	
$R^2$	0.92182		0.91084	
$R^2$ -adjusted	0.91089		0.89837	
Durbin-Watson statistic	1.56551		1.66136	
Heteroskedasticity test (Breusch-Pagan)	3.42766		14.6315	
$F$ statistic	84.3506		73.0838	
Exogeneity test (Hausman)	1.41145		0.26362	

\**t*-Student" statistic value appears in brackets below estimated coefficient

\*Significantly distinct from 0 at the 90% confidence level in the two-way test

\*\*Significantly distinct from 0 at the 95% confidence level in the two-way test

to produce any significant difference in the results, and we take this as a confirmation of the robustness of our estimations.<sup>17</sup>

## 5 Conclusions

We will begin by saying that our analysis of legal municipal borrowing restrictions reveals that these involve the use of three disciplinary strategies. These include policies aimed at controlling the permitted debt load, others that impact on current savings and a third type that affect the co-funding effort. This shows that the measures used in Spain to control municipal

<sup>17</sup> Though the estimations were checked for self-correlation, no significant problems emerged. The estimations also passed the Breusch-Pagan test for lack of heteroscedasticity. Finally, when the Hausman test was applied to analyse the explanatory variables for endogeneity, the hypothesis of endogeneity could not be rejected.

borrowing appear to match the theories on budgetary discipline and control advanced in Section 2, though the actual mechanisms still present design problems.

The rules are complex and have been subject to repeated amendment in recent years. This makes it more difficult to keep voters adequately informed, and creates a climate of uncertainty with respect to the borrowing policies adopted by local councils. Moreover, though debt is usually used for investment funding, as required by the Local Public Finance, (Law 39/1988, Reguladora de las Haciendas Locales, LRHL, adopted December 28, 1988), there is also evidence of it being used to cover other types of current and financial expenditures.

On the whole, Spanish local councils, especially those with small populations, keep their borrowing situation within most of the mandatory limitations. However, the trend in average net savings appears to be towards dissaving, due in part to debt refinancing operations. Nevertheless, the evidence in recent years is of much more subdued growth in borrowing, and an improvement in the financial solvency indicators used by national rule-makers.

In relation to our econometric model of municipal borrowing, we can conclude that the available empirical evidence confirms the notion that investment is one of the determinants in municipal borrowing. It can be seen, furthermore, that the legal limit on the ratio of capital spending to current revenue has been effective in curbing over-borrowing by local councils. In addition to this and as the Local Public Finance Law also claims, net savings emerge as a clear indicator of municipal funding capacity, less debt being taken on by councils with greater funding capacity. Councils that levy more taxes also tend to be more debt reliant. This appears to suggest that borrowing is not used as a substitute for taxation and that municipalities that make a greater tax effort have easier access to credit. Finally, we find support for a positive relationship between municipal income and indebtedness. This is explained by the fact that most local public goods and services are normal, and by the rigidity of the municipal taxation system, which hinders its adaptation to income growth.

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