Debt limits in Local Government: theoretical analysis and empirical evidence in Portuguese municipalities

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Abstract

In order to keep local public finances balanced, in many countries, measures restraining and controlling debt have been implemented.
In Portugal such concerns have been considered too. Accordingly, several legal diplomas have been passed, namely local finances laws, defining rules, mainly related to limits and restrictions to interest, repayments of borrowings, as well as net debt level. Therefore, it should be expected that these legal restrictions would contribute to reduce municipal debt.
Within this context, taking into consideration the institutional theory, particularly the coercive isomorphism perspective, this paper analyses the evolution of Portuguese municipalities' debt aiming at assessing whether institutional pressures consubstantiated in the legal framework meanwhile approved have led to a common behaviour for effectively reducing debt.
A six-year period was considered (2004-2009) following a positive approach and quantitative methodology.
Findings show that, during that period, contrary to what was expected, except for Açores region, municipalities in all other regions have increased their net debt levels. In summary, it may be observed that the introduction of restrictive measures to Portuguese municipalities' debt, during the analysed period, *ceteris paribus*, does not seem to have had the intended effects, i.e., debt reduction, hence raising questions about the effectiveness of legal control mechanisms.

Keywords: Municipal debt, Debt limits, Institutional restrictions, Local government.

1. Introduction

Various countries in the European Union are making major efforts towards budgetary consolidation, in an attempt to meet the objectives related to the deficit, established in the Stability and Growth Pact[1].

It will only be possible to achieve that consolidation if there is reciprocal solidarity among all sub-sectors of Public Administration (PA). In this context, specifically for the Portuguese situation, Law no. 52/2011 of October 13, sets out in no. 2 of Art. 10-B that "*The principle of reciprocal solidarity obliges all sub-sectors, through their organisms, to contribute proportionally to complying with the principle of budget stability in order to avoid situations of inequality"*. Therefore, based on this idea, the Budget Framework Law (LEO)[2] specifies that, in the State Budget Law (LOE) of the various years, to comply with the obligations of budget stability, debt limits must be established for the different sub-sectors.

Accordingly, it will therefore be essential to manage and control municipal debt, and so various official public documents[3] state it is fundamental that Local Administration (LA) participates fully in striving for budgetary consolidation in Public Administration.

Mainly since 1979, various rules have been implemented in Portugal to restrict LA debt. Those rules predominantly take the form of successive local finance laws. In this context, the current Local Finance Law (LFL) (Law no. 2/2007 of January 15) sets out in Art. 35, that municipalities debt must adhere to the following objectives: minimization of direct and indirect costs from a long-term perspective; guarantee a balanced distribution of costs over the various annual budgets; guard against excessively concentrated amortisation periods and avoid exposure to excessive risk.

In this context, considering the institutional theory and more specifically the coercive isomorphism perspective, in this research we will study the evolution of debt (from 2004 to 2009), to be able to assess if formal pressures, in the form of the various norms attempting to limit debt, have led to municipalities showing a common behaviour, originating a reduction in debt.

To achieve the objective defined, this study will be divided into four more sections, after this Introduction. Section 2 will be mainly theoretical and present a short literature review. In Section 3, a juridical-normative framework of Portuguese LA debt will be drawn up. The research methodology will be presented in Section 4. More precisely, the aim of the research will be defined, the research hypotheses presented and the collection, treatment and analysis of the data described. The results of the analysis will be described in Section 5.

Finally, the main conclusions of the study, as well as some limitations and suggestions for future lines of research, will be presented.

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[1]Approved by Resolution of the European Council on 17/06/97 (97/C 236/01), published in the Official Journal of the European Communities no. C 236, of August 2, 1997.

[2] Approved by Law no. 91/2001 of August 20. The last alteration to this Law implied it to be republished in Law no. 52/2011 of 13 October.

[3] E.g. Memorandum of Understanding on Specific Economic Policy Conditionality; Programme for Stability and Growth; European System of National and Regional Accounts; Budgetary Strategy Document 2012-2016.

2. Literature review

Internationally, various studies have appeared, generally framed by the institutional theory, approaching the subject of institutional restrictions imposed fundamentally by the State, in the attempt to control LA debt. Among them stand out the studies by Farnham (1985), Kieweit & Szakaly (1996), Feld & Kirchgässner (2001), Salinas Jiménez & Álvarez García (2002, 2003), Vallés Giménez *et al.* (2003), Cabasés *et al.* (2007), Pascual Arzoz *et al.* (2008), Macedo & Corbari (2009) and Feld *et al.* (2011).

One of the first investigations related to this topic was the one by Farnham (1985), who studied the effectiveness of limitations imposed by the State in two thousand and eighty seven localities in the United States of America (USA). He also studied the factors interfering with debt. Fundamentally, the author concluded that limits have a reduction effect on debt.

Also in the USA, Kieweit & Szakaly (1996), in a study of fifty North-American States, found that the level of debt in a given period depends on the type of restrictions imposed by law.

Feld & Kirchgässner (2001) conclude, among other aspects, that (legal) limitations of long-term planning do not restrict municipality debt. However, they found that citizens' democratic power (democratic vote) will be a preponderant factor as they are considerably concerned about fiscal discipline. In another study (Feld *et al.*, 2011) comparing results with the previous one, they conclude that alterations to the restrictions introduced in the scope of the New Public Management (NPM) do not have a significant influence on debt.

In a study analysing the determinants of debt, Escudero Fernández & Prior Jiménez (2002) also researched empirically whether restrictions imposed by law have an effect on how municipality debt is managed. The results allowed them to confirm, concerning the impact of legal restrictions, that there are significant differences in the periods studied, which indicates that they do influence debt.

In the same line, López Laborda & Vallés Giménez (2002) conclude that both norms of budgetary consolidation and limits imposed were effective, as they managed to moderate the growth of debt in Spanish autonomous regions.

Salinas Jiménez & Álvarez García (2002, 2003), who consider that the application of debt limits as well as coordinating measures of fiscal policy are fundamental, also obtained results allowing them to validate the effectiveness of those restrictions.

Vallés Giménez *et al.* (2003) and Cabasés *et al.* (2007) conclude that the evolution of institutional restrictions have led to municipalities not making excessive use of debt, and have therefore been effective.

Pascual Arzoz *et al.* (2008) found that the norm regulating municipal debt is adjusted to theoretical control principles, which leads to its effective control.

Macedo & Corbari (2009) also confirm the basic hypothesis, concluding that municipal debt was influenced by introduction of the law of fiscal responsibility.

Based on the results summarised in Table 1, we gather that generally the various authors have validated hypotheses that legal restrictions influence debt. Such limitations seem to lead to entities, namely municipalities, adopting behaviour which tends to be identical, in reducing debt and complying with legal norms. Therefore, in the context of the institutional theory, a certain coercive isomorphism seems apparent.

Table 1 – Empirical studies about institutional restrictions

Authors	***Sample/Period of analysis***	***Objectives***	
Farnham (1985)	**Sample**: 2,087 localities in the United States of America, with over 10,000 inhabitants **Period of analysis**: 1976-1977	Study the effectiveness of debt limits.	Found that limits have a nega localities with the highest *per c*
Kieweit & Szakaly (1996)	**Sample**: 50 States in North-America **Period of analysis**: 1961-1990	Study the relationship between debt and different types of restrictions stipulated in legal diplomas.	Positive relationship between proportion of school-age popu the level of debt, in a given per
Feld & Kirchgässner (2001)	**Sample**: 134 of the largest Swiss municipalities **Period of analysis**: 1990	Study the restrictions of debt and its determinants.	Conclude, among other asp planning do not restrict munic the hypotheses that the numbe debt.
López Laborda & Vallés Giménez (2002)	**Sample**: 17 Spanish Autonomous Regions **Period of analysis**: 1987-1997	Analyse the impact of different institutional mechanisms implemented to control debt, especially limits foreseen by laws.	Conclude that both norms of b effective, as they managed to r
Salinas Jiménez & Álvarez García (2002, 2003)	**Sample**: 17 Spanish Autonomous Regions **Period of analysis**: 1986-1999	Analyse the effective functioning of legal restrictions in relation to debt in Spanish Autonomous Regions.	There is a relationship betw investment and debt. Regardin did not find significant releva obtained results allowing them
Vallés Giménez *et al.* (2003) & Cabasés *et al.* (2007)	**Sample**: Spanish municipalities **Period of analysis** 1988-1998 & 1988-2000	Study restrictions to debt and elaborate a model with its explanatory determinants.	Conclude that the evolution of avoiding excessive use of deb tax revenue are the variables m

Table 1 – Empirical studies about institutional restrictions (Cont.)

Authors	*Sample/Period of analysis*	*Objectives*	
Pascual Arzoz *et al.* (2008)	**Sample**: 238 Spanish municipalities in the Autonomous Region of Navarra **Period of analysis**: 1995-2003	Assess the effectiveness of norms on debt and its determinants.	The norm regulating municip leads to its control. They high as well as net savings. R development, they conclude th
Macedo & Corbari (2009)	**Sample**: Brazilian municipalities with over 100,000 inhabitants **Period of analysis** 1998-2006	Analyse whether the law of fiscal responsibility influenced debt.	They confirm the basic hypot influenced by the law of fiscal
Feld *et al.* (2011)	**Sample**: 137 of the largest Swiss municipalities **Period of analysis**: 2004	Study the restrictions to debt (compared to 1990) and its determinants.	They conclude fundamentally scope of the NPM do not hav that the number of inhabitant debt.
Fernández Llera (2011)	**Sample**: 17 Spanish Autonomous Regions **Period of analysis**: 1984-2008	Assess the effectiveness of financial markets as a mechanism to restrict debt.	They find that the disciplin reasonably well regarding de influences debt.

3. Juridical-normative framework of debt in Portuguese LA

3.1. Evolution of the juridical regime up to the LFL of 2007

According to Cabo (2009), the different laws regarding local finance have established rules and procedures related to debt, fundamentally limiting the amount, restricting amortisation and interest charges and restraining recourse to credit as a function of the purposes of the loan.

The first LFL (Law no. 1/79 of January 2) forced the Government to regulate municipalities' loans[4]. To fulfil this purpose, Law-Decree no. 258/79 of July 28, was passed, stipulating the principal norms related to short, medium and long-term loans. Concerning medium and long-term loans, it set out that these could only by contracted for reproductive investment of a social or cultural nature, and also to restore municipality finances to a healthy state (Art. 3). Total annual charges of amortisation and interest, created by those investments could not exceed 20% of the amount budgeted for investment in the respective year (Art. 7). As for short-term debt, Art. 5, no. 1 established that loans could be contracted in any circumstances in the case of exceptional treasury difficulties, but could not be used for current expenditure and the amount could not at any time be over 1/12 of the amount budgeted for investment by the municipality in the respective year.

Over the years, new local finance laws appeared, (the second – Law-Decree no. 98/84 of March 29, and the third – Law no. 1/87 of January 6), presenting alterations of little significance.

Later, Law no. 42/98 of August 6 set out in Art. 23, no. 2, that municipality debt should be guided by principles of rigour and efficiency, aiming to: a) minimize direct and indirect costs from a long-term perspective; b) guarantee balanced distribution of costs over the various annual budgets; c) prevent an excessively short period of amortisation; and d) prevent exposure to excessive risk. The debt limits established followed the same terms of the preceding laws.

As PA deficit evolved, representing in 2001 4.4% of GDP, various measures related to municipal debt had to be taken between 2002 and 2007, among the most noticeable:

- The LOE of 2002 (Law no. 109-B/2001 of December 27) foresaw in no. 2 of Art. 18 authorisation for the government to limit municipality debt, in an attempt to guarantee fulfilment of the objectives established for PA debt. With the approval of Law no. 16-A/2002 of May 31 (Rectifying Budget of 2002), municipalities and municipalities' companies were prevented from contracting loans that implied increasing their net debt in the course of the budget year, with some exceptions.
- In 2002, there was also an alteration to the LFL brought into effect by the Budget Stability Law (Organic Law no. 2/2002 of August 28). This law altered the LEO (Law no. 91/2001 of August 20, Title V). Therefore, in the terms of Art. 84 of the LEO and Art. 35-A of the LFL, it was determined that the LOE, for each year, could set limits for municipal debt, and these could be more restrictive than the ones foreseen in the LFL.

[4] It should be noted that it was only in the Constitution of the Portuguese Republic of 1976 that greater autonomy was granted to municipalities, with definition of the basis of the financial relationship between central administration and municipalities.

- In 2003, the LOE (Law no. 32-B/2002 of December 30) continued the concerns about containing the deficit. In this connection, Art. 19 introduced some more restrictive measures regarding municipal debt. One of them (Art. 19, no. 4) set out that the total amount of net debt in municipalities, including all forms of debt, could not exceed what existed at December 31, 2002. The LOE for 2003 also defined, in no. 1 of Art. 19, as the limit for interest and amortisation of medium and long-term loans, the higher of the following: an eighth of Basic, General and Cohesion Municipal Funds allocated to the municipality, or 10% of investment expenditure carried out by the municipality in the previous year. It prohibited recourse to new medium and long-term loans by municipalities that had already exceeded the limits set in no. 1 of Art. 19. Regarding the exceptions, they remained as before.
- In 2004, 2005 and 2006 the respective State Budget Laws (Law no. 107-B/2003 of December 31; Law no. 55-B/2004 of December 30; and Law no. 60-A/2005 of December 30) maintained fundamentally the debt limits that had been set for 2003.

It should be noted, however, that the LOE for 2006 clarifies in no. 5 of Art. 33, the concept of the financing need of ESA95[5], stating that *"...it is the result of the difference between total financial liabilities, whatever their form, including contracted loans, financial leasing contracts and debts with suppliers, and total financial assets, namely, cash balance, deposits in financial institutions and treasury applications"*.

3.2. From the LFL of 2007 to the present

The current LFL (Law no. 2/2007 of January 15) contains important alterations that essentially mean more restricted access to debt, so contributing to the sustainability of municipality finances and consequently that of PA.

One of the guidelines of the current LFL, also present in the LOE for 2007 (Law no. 53-A/2006 of December 29), is related to introducing the concept of municipality net debt. Accordingly, no. 1 of Art. 36 establishes that it will be *"... equivalent to the difference between the sum of liabilities, whatever their form, including contracted loans, financial leasing contracts and debts with suppliers, and the sum of assets, namely cash balance, deposits in financial institutions, treasury applications and credit on third parties"*.

No. 2 of the same article introduces the concept of the total net debt of each municipality, which includes the net debt of municipal associations and entities integrating the local business sector for which it is responsible.

According to Lobo & Ramos (2010), the model for determining debt limits is redefined, abandoning the definition of the limit as a function of interest and amortisation. Therefore, the fundamental rules related to debt stock limits are the following:

a) "*The total amount of net debt in each municipality, on 31 December each year, cannot be over 125% of the amount of revenue coming from municipal taxes, the municipality's participation in the FEF, participation in IRS (individual*

[5] European System of Regional and National Accounts (ESA).

income tax) and derrama[6]*, and from participation in the results of entities in the local business sector, relating to the previous year.*" (Art. 37, no. 1).

b) The amount of debt in each municipality relating to medium and long-term loans cannot exceed, on 31 December each year, the total revenue in the previous year eligible for calculating the limit of net debt (Art. 39, no. 2).
c) At no time of the year can the amount of debt in each municipality relating to short-term loans exceed 10% of the value of revenue eligible for calculating the legal limit of net debt (Art. 39, no. 1).

Failing to comply with debt limits makes municipalities subject to sanctions. Firstly, according to no. 2 of Art. 37 and no. 3 of Art. 39, when a municipality does not keep within the municipal net debt limit or the debt limit related to medium and long-term loans, it will be obliged to make an adjustment in each subsequent year of at least 10% of the amount over the limit, until this is complied with. Secondly, going over the net debt limit foreseen for each municipality will mean a reduction by the same amount in the budgetary transfers due, in the following year, from the State sub-sector, which will be affected to the Municipal Regulating Funds (Art. 5, no. 4).

In addition, Law no. 2/2007 of January 15, defines other mechanisms for controlling debt with suppliers, most prominent among them being:

- "*Municipalities are prohibited from either accepting or withdrawing bills of exchange, granting sureties, subscribing to promissory notes, granting personal or real guarantees, except in the cases specifically foreseen in law*" (Art. 38, no. 10).
- "*Municipalities are prohibited from entering into contracts with financing bodies with the purpose of consolidating short-term debt, as well as passing over unmet credit.*" (Art. 38, no. 12).
- The obligation for municipalities to liquidate, in the period of one year, debts to third parties that, per supplier, are over a third of the total amount of the same type of debt (Art. 38, no. 9).

As set out in the previous LFL, in the Budget Stability Law and in the LEO, it is also established in the current law that with a *"...view to ensuring effective coordination between State finances and Municipality finances, the State Budget Law can define maximum limits for municipal debt which are different from those established in the current law."*.

The LOE for 2008 (Law no. 67-A/2007 of December 31) and for 2009 (Law no. 64-A/2008 of December 31) did not introduce significant alterations. It only made an exception to the debt limits foreseen in Law no. 2/2007 of January 15, for *"...loans destined to finance investment in the sphere of the Initiative for Operations to Improve and Reintegrate Deprived Neighbourhoods, which must be previously authorised by a ruling by the member of Government responsible for the area of finances"*.

Also the LOE for 2010 (Law no. 3-B/2010 of April 28) maintained essentially the rules related to debt limits. We can therefore consider that the rules associated with municipalities' debt, in force at present, are set out in the current LFL. It should be noted, however, that outside the limits, besides what is stated in the LOE for 2008, is the *"... acquisition of housing..."* in the scope of the Special Rehousing Programme

[6] *Derrama* is a percentage of the companies' income tax each municipality applies to the companies established in its territory. The percentage to be applied depends on the level of income.

in the Metropolitan Areas of Lisbon and Porto, and municipal rehousing programmes with the main objective of eradicating shacks and similar dwellings[7].

Following a more prudent and rigorous budgetary policy, and in the attempt to ensure reduced net debt in municipalities, the LOE for 2011 (Law no. 55-A/2010 of December 31) introduces important alterations. Thereby, no. 1 of Art. 53 stipulates that the value of net debt in each municipality cannot exceed what existed on December 30, 2010.

Concerning medium and long-term loans, more restrictive measures are also introduced, with contracts "*... being limited to the value resulting from the distribution of the total amount of amortisation carried out by municipalities in 2009, proportional to the debt capacity available to each municipality...*" (Art. 53. no. 2 of Law no. 55-A/2010).

The exceptions in calculating the value of net debt are also contemplated, and so no. 4 of Art. 53 considers certain loans and amortisation, as long as duly justified and authorised, namely *"...loans destined to financing investment supported by the Financing Mechanism of the European Economic Area – FMEEA in the scope of the Initiative for Operations to Develop and Reintegrate Deprived Neighbourhoods"*.

During 2011, various fundamental documents were published relating to Portuguese economic and budgetary policy[8], which reveal even more the need for tight control of public debt. Associated to this, the LOE for 2012 (Law no. 64-B/2011 of December 30) maintained, in relation to net debt, what was established in the LOE for 2011, altering the date of reference to December 31, 2011 (Art. 66, no. 1).

As for medium and long-term loans, the law foresaw even more restrictive measures. Besides what is set out for 2011, no. 7 of Art. 66 considers that the value available for distribution will be reduced by 150 million euros. Some exceptions remained[9] as long as duly justified and authorised by a member of Government (no. 5).

The LOE for 2013 (Law no. 66-B/2012 of December 31) continues in the same direction as far as municipal debt is concerned, with no.1 of Art. 98 setting out that the limit for net debt in each municipality for 2013 must aim to ensure a zero total variation of net municipal debt as a whole.

Regarding medium and long-term debt, the law sets out, in no. 8 of Art. 98, that the value available for allocation will also be reduced, as in 2012, by 150 million euros.

[7] See Law-Decree no.159/2003 of July 18, which regulates the conditions for acquiring dwellings by municipalities and by the National Housing Institute in controlled-cost housing undertakings when destined to ensuring the rehousing of families under municipal rehousing operations.

[8] Namely, as mentioned above the Memorandum on Specific Economic Policy Conditionality (signed by the Portuguese Government in May 2011, when Portugal was granted financial assistance by the EU and the IMF); Budgetary Strategy Document 2011-2015; Programme for Stability and Growth 2011-2015; and the LEO.

[9] Taking into account the country's economic and financial situation, namely in the scope of both the QREN (National Strategic Reference Framework) and the urban improvement, and including the loan from the European Investment Bank (EIB).

4. Methodology

4.1. Objective and research hypotheses

To maintain balanced municipality finances, as far as debt is concerned, as seen above, various countries have implemented legal measures in an attempt to control it (Sousa Franco, 1991, Salinas Jiménez & Álvarez García, 2003). Also in Portugal, as we observe in Section 3, there have been concerns in this area. The various legal rulings, namely the various local finance laws, have defined rules, fundamentally in relation to the amount of debt and imposing limits for interest and amortisation (Cabo, 2009).

Consequently, during the period of analysis of this study (2004-2009), the rules to limit debt developed, with enforcement of the LFL of 2007 being fundamental. As explained in Section 3, this law established important alterations, essentially meaning greater restrictions in access to debt, so contributing to the sustainability of local finances, and consequently that of PA. It is also of note that the law referred to introduces, for the first time, restrictions relating to the net debt of each municipality.

Therefore, considering the institutional theory, and more specifically the coercive isomorphism perspective, the main objective of this research will be to assess whether formal pressure (debt limits), in the form of legal rulings, have led the 308 Portuguese municipalities to show a common behaviour, resulting in reduced debt, during the period 2004 to 2009. Bearing in mind other investigations studying more specifically the effectiveness of restrictive measures (Farnham, 1985; Kieweit & Szakaly, 1996; Feld & Kirchgässner, 2001; Vallés Giménez *et al.*, 2003; Cabasés *et al.*, 2007 and Feld *et al.*, 2011), as well as the specific characteristics of Portuguese regulations, we define the following hypotheses:

H$_1$: *Municipal debt decreased during the period 2004 to 2009.*

H$_2$: *Municipal debt decreased significantly in the year 2007.*

H$_3$: *Municipal debt presents significant reductions after the year 2007.*

It is of note that there will be no assessment of the specific effectiveness of the various restrictive measures contained in the different rulings, but only if their implementation originated, in general terms, a reduction in net debt during the period of analysis[10].

Net debt *per capita* will be used as the study variable. Calculation of this indicator was based on what was set out in the regulations in force for the jurisdiction in question, namely the ESA95 and no. 1 of Art 36 of the current Portuguese LFL. Therefore, as presented above, it will be calculated by the difference between the value of financial liabilities (short, medium and long-term debt to be paid) and the value of financial assets (short, medium and long-term debt owed by third parties, short-term financial investments, deposits in financial institutions and cash balance), on 31 December, divided by the total number of inhabitants, in each year of analysis. According to no. 2 of Art. 36 referred to, calculation of net debt should be consolidated, i.e., it should include the proportion of the municipality's participation in the capital of municipal associations and the local business sector. However, due to

[10] As we observed in Section 3, initially restrictions were essentially related to short, medium and long-term loans. From 2007, the restrictions became especially related to net debt.

the difficulty of gaining access to information, since many municipalities do not disclose their consolidated accounts online and they are not in each Municipalities' Portal, this study will only consider the net debt of municipalities' individual accounts. Additionally, some loans exempted from the limits were not considered.

4.2. Data collection, treatment and analysis

The data collected may be classified as secondary (Costa, 2012), since they derive essentially from databases. This classification is also justified due to them being held by third parties and not originally collected by us (Ferreira & Sarmento, 2009). Therefore, to obtain data, use will be made use of the database on the Municipalities' Portal[11]. We will also use the database of the National Institute of Statistics (INE)[12].

Methodologically, this research is set within the quantitative positivist theory. It is therefore necessary to use data analysis tools that allow us to test the hypotheses.

Data treatment will be based on various hypothesis tests, highlighting the following: to analyse the normality and homogeneity of the variables respectively, the *Kolmogorov-Smirnov* tests and the *Levene* test will be carried out. In the case of not observing one of the assumptions for using parametric tests, we will use non-parametric tests. Therefore, depending on the results of the previous tests, we will use the *t-Student* parametric test or the *Wilcoxon* non-parametric test to determine the equality of averages of municipal net debt *per capita,* for two paired samples, considering a level of significance of 5%.

5. Results

According to Alpendre & Almeida (2010), concerning budget consolidation strategy in Portugal, measures have been implemented to allow control of municipal debt, namely through definition of increasingly reduced debt limits for each municipality.
As described in Section 3, there has been significant tightening of debt limits. From this perspective, based on coercive institutional isomorphism, those restrictions, *ceteris paribus*, should have resulted in reduced debt.

In this section we will present the results of the hypotheses associated with the influence of legal restrictions on Portuguese municipal debt, beginning with a global analysis and thereafter by region.

5.1. Global analysis

Analysis of Table 2 shows that, contrary to what would be expected given the tightening of legal restrictions, net debt *per capita* presents a rising tendency during the period 2004-2009. The growth found between 2004 and 2009 was 57.2%, with slight decreases observed from 2005 to 2006 and from 2006 to 2007 (mean values).

[11] www.portalautarquico.pt
[12] www.ine.pt

Table 2 – Descriptive statistics of net debt *per capita* (€)

	Minimum	*Maximum*	*Mean*
2004	-804.060	2,942.790	517.929
2005	-739.000	4,616.960	632.059
2006	-789.350	3,975.670	625.568
2007	-873.290	5,923.150	617.068
2008	-824.560	6,517.520	669.804
2009	-915.540	6,694.880	814.188

This finding seems to show that, contrary to what was formulated in hypothesis $\boldsymbol{H_1}$, there is no reduction of debt levels during the period 2004 to 2009. This appears to demonstrate that the creation and implementation of restrictive measures in relation to municipal debt, *ceteris paribus*, have not been effective, since municipalities have continued to increase their debt. It should be noted that in calculating debt limits, some loans are exempted[13] and, as referred, we did not take this into consideration. Nevertheless, as the total value, without considering exemptions, continues to increase, some doubts may be raised as to Portuguese municipalities' contribution to consolidation of PA finances.

For a based validation of the previous evidence, we checked whether the evolution of net debt *per capita* was significant during the period considered. As the net debt *per capita* (ENDLIQpc) for all the years does not present a normal distribution (Appendix I), we carried out the *Wilcoxon* non-parametric test to determine the equality of averages during two consecutive years, for two paired samples.

The application of the *Wilcoxon* test (Table 3) allows rejecting the null hypothesis of equality of averages in net *per capita* debt between the years 2004 and 2005, 2006 and 2007, 2007 and 2008, and 2008 and 2009, presenting a *p-value* of 0,000, 0,011, 0,000 and 0,000 respectively. We can therefore conclude there is statistically significant growth of net debt *per capita* for the pairs of years 2004 and 2005, 2007 and 2008, and 2008 and 2009.

Between 2006 and 2007, there was a statistically significant reduction, a fact which could be due to the current LFL coming into effect. So based on this result, it would be possible to validate hypothesis $\boldsymbol{H_2}$. However, considering the results for the whole period, we find we cannot validate hypothesis $\boldsymbol{H_1}$. This result seems to indicate that, *ceteris paribus*, institutional pressure, in the form of legal rulings, have not led to municipalities showing a common behaviour resulting in diminished net *per capita* debt; on the contrary, the general tendency has been one of growth.

[13] For example, the current LFL (Law no. 2/2007 of January 15) exempts loans destined to finance programmes of urban renewal. The previous law (Law no. 42/98 of August 6), exempted those related to social housing, exceptional expenditure in the case of public calamity and investment co-participated by EU funds.

Table 3 – *Wilcoxon* test – Evolution of net debt *per capita*

		Mean	*Standard deviation*	*Z*	*Sig.*
2005-2004	2004	517.929	523.469	-11.313[a]	.000
	2005	632.059	606.081		
2006-2005	2005	632.059	606.081	-.584[b]	.559
	2006	625.568	600.822		
2007-2006	2006	625.568	600.822	-2.533[b]	.011
	2007	617.068	685.774		
2008-2007	2007	617.068	685.774	-6.480[a]	.000
	2008	669.804	725.375		
2009-2008	2008	669.804	725.375	-10.953[a]	.000
	2009	814.188	791.823		

a. Based on negative ranks.

b. Based on positive ranks.

For the pair of years 2005 and 2006, we find that despite diminished net debt *per capita*, this is not statistically significant.

Analysing the years following the publication of the current LFL, i.e., after 2007, no significant reduction of net debt *per capita* was found (on the contrary, debt increased), and so nor can we validate hypothesis $\boldsymbol{H_3}$.

All in all, we can conclude that, *ceteris paribus*, implementation of debt limits for municipalities does not seem to be contributing to its reduction.

5.2. Regional analysis

In this section we will also study the evolution of net debt *per capita*, based on a division by region, aiming to deepen and reinforce the results obtained in the global analysis.

Concerning the year of 2004, the value of net debt *per capita* is € 517.93, for the whole country, while the region of the Açores presents the highest average, with € 922.38 (Table 4). The Lisboa region, on other hand, has the lowest average net debt *per capita* (€ 298.76).

In 2005 a slight increase is found in relation to 2004, rising to € 632.06 for the whole country. The region showing the highest figure continues to be the Açores with € 1,001.89. Lisboa continues to be the region with the lowest average net debt *per capita* (€ 329.99).

In 2006 and 2007, the tendency to grow is broken, and a small reduction is found, but without returning to 2004 levels. As for the regions with the lowest and highest values, they are the same as in 2004 and 2005, i.e., Lisboa and the Açores respectively.

2008 and 2009 once again show a rising tendency, and the regions with the lowest and highest net debt *per capita* remain unchanged. In 2009, very significant increases are recorded in the regions of Algarve and Madeira.

Table 4 – Net debt *per capita* (€) by region (2004-2009)

Region	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
Norte	505.54	621.74	629.42	635.31	677.60	773.78
Centro	495.24	606.82	603.31	625.40	682.99	805.06
Lisboa	298.76	329.99	312.12	290.51	319.02	380.15
Alentejo	502.03	640.81	657.25	621.64	658.69	796.58
Algarve	469.64	541.60	488.16	419.59	535.88	991.63
Açores	922.38	1,001.89	1,022.90	1,023.88	1,077.44	1,175.54
Madeira	617.33	857.97	630.77	463.11	579.21	1,095.30
Total	**517.93**	**632.06**	**625.57**	**617.07**	**669.80**	**814.19**

Considering the previous analysis, there seems to be evidence that in terms of net debt *per capita* in the different regions, a general increase was registered during the period of analysis.

Seeking to validate the previous evidence, we also checked whether the evolution of the level of net debt *per capita* was significant during that period. To do so we followed the method used for the general analysis, i.e., the *Wilcoxon* test.

Table 5 – *Wilcoxon* Test – Evolution of net debt *per capita* in the Norte region

		Mean	*Standard deviation*	*Z*	*Sig.*
2005-2004	2004	505.542	408.636	-6.741[a]	.000
	2005	621.742	466.383		
2006-2005	2005	621.742	466.383	-.174[b]	.862
	2006	629.420	501.793		
2007-2006	2006	629.420	501.793	-.239[a]	.811
	2007	635.310	533.369		
2008-2007	2007	635.310	533.369	-3.301[a]	.001
	2008	677.597	577.857		
2009-2008	2008	677.597	577.857	-5.385[a]	.000
	2009	773.778	616.179		

a. Based on negative ranks.

b. Based on positive ranks.

As can be observed in Table 5, the Norte region presents, as was found for the country as a whole, an overall tendency for net *per capita* debt to grow, and in this case, for the entire period 2004 to 2009. As for statistical significance, this is only found between the years 2004 and 2005, 2007 and 2008, and 2008 and 2009, rejecting the hypothesis of equality of average net debt, and allowing the conclusion there is a statistically significant increase.

In the Centro region (Table 6), the test allows rejection of the hypothesis of equality of averages for the pairs of years 2004-2005, 2007-2008 and 2008-2009, since they present a *p-value* < 0.05. For the other years, there is no statistically significant evidence; however, in the year the LFL was published, net debt *per capita* actually shows an increase.

Table 6 – *Wilcoxon* Test – Evolution of net debt *per capita* in the Centro region

		Mean	*Standard deviation*	*Z*	*Sig.*
2005-2004	2004	495.236	531.564	-6.953[a]	.000
	2005	606.816	650.008		
2006-2005	2005	606.816	650.008	-.640[a]	.522
	2006	603.310	596.809		
2007-2006	2006	603.310	596.809	-1.059[b]	.290
	2007	625.397	783.460		
2008-2007	2007	625.397	783.460	-3.545[a]	.001
	2008	682.993	832.890		
2009-2008	2008	682.993	832.890	-7.502[a]	.000
	2009	805.062	853.262		

a. Based on negative ranks.

b. Based on positive ranks.

As for the Lisboa region, analysis of Table 7 also shows rejection of the hypothesis of equality of averages from the pair of years 2006-2007, with statistically significant differences. In this region, there is a statistically significant reduction, with a *p-value* of 0.049 (0.098/2[14]) and 0.031 (0.062/2), of net debt *per capita* in the years 2005-2006 and 2006-2007, allowing strengthened validation of $\boldsymbol{H_2}$. From that year on, the tendency changes, observing a statistically significant increase in debt.

Table 7 – *Wilcoxon* Test – Evolution of net debt *per capita* in the Lisboa region

		Mean	*Standard deviation*	*Z*	*Sig.*
2005-2004	2004	298.762	293.597	-1.538[a]	.124
	2005	329.991	350.084		
2006-2005	2005	329.991	350.084	-1.657[b]	.098
	2006	312.116	381.334		
2007-2006	2006	312.116	381.334	-1.870[b]	.062
	2007	290.509	400.436		
2008-2007	2007	290.509	400.436	-2.391[a]	.017
	2008	319.019	401.055		
2009-2008	2008	319.019	401.055	-3.290[a]	.001
	2009	380.150	379.879		

a. Based on negative ranks.

b. Based on positive ranks.

Regarding the Alentejo region (Table 8), the hypothesis of equality of averages is rejected for all pairs of years except 2005-2006 (*p value* > 0.05). It is of note that the reduction observed from 2006 to 2007 is statistically significant (0.065/2), which also allows corroboration of $\boldsymbol{H_2}$.

[14] As the *p-value* presented in the table is for the bilateral test, this value will have to be divided by two, since the intention is to do a unilateral test (Marôco, 2010).

Table 8 – *Wilcoxon* Test – Evolution of net debt *per capita* in the Alentejo region

		Mean	*Standard deviation*	*Z*	*Sig.*
2005-2004	2004	502.028	578.053	-5.393[a]	.000
	2005	640.811	627.971		
2006-2005	2005	640.811	627.971	-.708[a]	.479
	2006	657.249	639.375		
2007-2006	2006	657.249	639.375	-1.847[b]	.065
	2007	621.641	672.162		
2008-2007	2007	621.641	672.162	-2.605[a]	.009
	2008	658.692	703.799		
2009-2008	2008	658.692	703.799	-4.920[a]	.000
	2009	796.578	769.422		

a. Based on negative ranks.

b. Based on positive ranks.

Table 9 – *Wilcoxon* Test – Evolution of net debt *per capita* in the Algarve region

		Mean	*Standard deviation*	*Z*	*Sig.*
2005-2004	2004	469.636	548.095	-1.138[a]	.255
	2005	541.597	529.126		
2006-2005	2005	541.597	529.126	-1.551[b]	.121
	2006	488.156	579.320		
2007-2006	2006	488.156	579.320	-1.551[b]	.121
	2007	419.593	633.224		
2008-2007	2007	419.593	633.224	-2.379[a]	.017
	2008	535.878	650.377		
2009-2008	2008	535.878	650.377	-3.103[a]	.002
	2009	991.631	490.187		

a. Based on negative ranks.

b. Based on positive ranks.

In the Algarve region (Table 9), which also presents a general tendency to grow during the period of analysis, the hypothesis of equality of averages (*p value* < 0.05) can only be rejected for the pairs of years 2007-2008 and 2008-2009. So for these pairs of years, the growth of net debt *per capita* is significant.

Concerning the Açores region (Table 10), just as in the previously analysed regions, we find a general tendency for net *per capita* debt to grow. Nevertheless, the hypothesis of equality of averages (*p value* < 0.05) can be accepted for all pairs of years analysed, except for that of 2004-2005. Therefore, overall, we can conclude there are no statistically significant differences in the growth of net debt *per capita* during that period.

Table 10 – *Wilcoxon* Test – Evolution of net debt *per capita* in the region of the Açores

		Mean	*Standard deviation*	*Z*	*Sig.*
2005-2004	2004	922.377	714.053	-1.972[a]	.049
	2005	1001.889	801.341		
2006-2005	2005	1001.889	801.341	-.483[b]	.629
	2006	1022.898	944.100		
2007-2006	2006	1022.898	944.100	-.362[a]	.717
	2007	1023.881	984.291		
2008-2007	2007	1023.881	984.291	-.805[a]	.421
	2008	1077.438	1052.640		
2009-2008	2008	1077.438	1052.640	-.684[a]	.494
	2009	1175.542	1319.706		

a. Based on negative ranks.

b. Based on positive ranks.

For the region of Madeira (Table 11), the hypothesis of equality of averages can be rejected for all years (the *p-value* figures divided by 2, for the reasons presented above are below 0.05), with a significant increase in debt for the pairs of years 2004-2005, 2007-2008 and 2008-2009. For the pairs of years 2005-2006 and 2006-2007, a significant reduction is registered, which also allows corroboration of H_2.

Table 11 – *Wilcoxon* Test – Evolution of net debt *per capita* in the region of Madeira

		Mean	*Standard deviation*	*Z*	*Sig.*
2005-2004	2004	617.335	584.380	-1.867[a]	.062
	2005	857.967	831.556		
2006-2005	2005	857.967	831.556	-1.867[b]	.062
	2006	630.774	449.127		
2007-2006	2006	630.774	449.127	-1.867[b]	.062
	2007	463.107	341.364		
2008-2007	2007	463.107	341.364	-1.867[a]	.062
	2008	579.205	320.165		
2009-2008	2008	579.205	320.165	-1.778[a]	.075
	2009	1095.305	946.869		

a. Based on negative ranks.

b. Based on positive ranks.

Summarizing, it can be stated there seems to be statistical evidence that during the period of analysis, contrary to what would be expected, except for the region of the Açores, all the others increased significantly their level of net *per capita* debt, which means rejection of H_1.

As for the statistically significant reduction of values for the pair of years 2006-2007, this is found in the regions of Lisboa, Alentejo and Madeira. Therefore, as in the global analysis, we validate H_2 for these regions.

It is therefore found that, although in general, the introduction of measures to restrict the level of debt in Portuguese municipalities, during the period of analysis, does not appear to have led to its reduction, there seems to have been some effect in the first year of enforcement of the 2007 LFL. Still, this conclusion does not agree with the results obtained by Farnham (1985), Vallés Giménez (2002), López Laborda & Vallés

Giménez (2002), Ashworth *et al.* (2005), Cabasés *et al.* (2007), Geys (2007) and Hájek & Hájková (2009), as these authors validated the hypothesis related to the effectiveness of measures restricting municipality debt. As mentioned above, this situation can be explained by the fact that the majority of municipalities still have a margin concerning debt limits, and so the restrictions imposed do not affect them. Secondly, the non-existence of heavy sanctions for failing to comply with debt limits[15], could lead to a lack of concern in managing it.

6. Conclusions

The results obtained give empirical support to the idea that the various restrictive measures related to municipal debt did not lead to its reduction during the period of analysis, observing, on the contrary, an increase. Nevertheless, the significant reduction found in the year the LFL of 2007 took effect, may show that those in charge of municipalities became more concerned and attentive during that year. However, in the following years (2008 and 2009), once again there was a sharp increase, which seems to indicate some lack of effectiveness of the legal mechanisms[16].

In these circumstances, it will be fundamental that, besides insisting on compliance with the limits established in the LFL, legislative measures for tighter control continue to be implemented. A good example to be followed was publication of Law of Commitments and Delayed Payments (Law no. 8/2012 of February 21)[17]. Also greater scientific development, to which we aim to contribute with this research, could draw attention to the need to control municipalities' debt.

This line of research would benefit from an extension to consider the consolidated net debt of the whole 'Municipal Group'. Additionally, we believe it would be interesting to study the effectiveness of normative limitations related to debt, essentially after implementation of the LFL of 2007, seeking to assess how each of the limits defined therein contributes to control of debt.

[15] According to no. 2 of Art. 37 of the LFL, *"When a municipality does not comply with the ruling in the previous number, it must reduce in each subsequent year at least 10% of the amount exceeding its net debt limit, until that limit is reached".*

[16] According to information on the Municipalities' Portal, in 2008 and 2009, 51 and 71 municipalities, respectively, went over their debt limits.

[17] Approved the rules applicable to the assumption of commitments and delayed payments by all public entities; regulated by Law-Decree no. 127/2012 of June 21.

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Appendix I – Testing the normality of net debt *per capita* / year

	Kolmogorov-Smirnov			*Shapiro-Wilk*		
	Statistic	***df***	***Sig.***	***Statistic***	***df***	***Sig.***
ENDLIQpc2004	.132	308	.000	.873	308	.000
ENDLIQpc2005	.133	308	.000	.835	308	.000
ENDLIQpc2006	.120	308	.000	.874	308	.000
ENDLIQpc2007	.135	308	.000	.823	308	.000
ENDLIQpc2008	.152	308	.000	.803	308	.000
ENDLIQpc2009	.159	308	.000	.794	308	.000