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The Determinants of Local Government Financial Imbalance: A Preliminary Analysis.....	6734
<i>Nuno Adriano Baptista RIBEIRO, Sónia P. NOGUEIRA and Eva Cláudia Gomes da Costa BASÍLIO</i>	
The Main Directions of Open and Distance Education Development in the Universities of Western Europe (The end of the 20th – the beginning of the 21st century)	6748
<i>Natalya V. PŁAKSINA, Maya V. OVCHINNIKOVA and Viktor A. Ivanov</i>	
Students' Information Competence Development Through Indirect Educational Activity.....	6756
<i>Dmitry LUCHANINOV, Ruslan BAZHENOV, Tatiana GORBUNOVA, Irina ALTUKHOVA and Venera SABIROVA</i>	
Analysis of Digital SME Development in Emerging Markets Context.....	6761
<i>Anna SVIRINA, Saida KHATUKAJ, Bella KHUTYZ, Aslan TAMOV, Emin BABALYAN and Anzhela PSHYZOVA</i>	
Data Driven Cyber-Security Corporate Systems: Development and Implementation.....	6768
<i>Yulia EFIMOVA, Artem GAVRILOV and Anna SVIRINA</i>	
Digital Startup Internationalization Trends: Evidence from Venture Capital.....	6776
<i>Anna SVIRINA, Liliya ILIKOVA, Liliyana NUGUMANOVA and Natalia APPALONOVA</i>	
Digital Transformation in Higher Education: Academic and Administrative Staff Perception.....	6783
<i>Natalja VERINA, Jelena TITKO and Inga SHINA</i>	
A Comparative Analysis on Perceptions and Attitudes towards GDPR from a Marketing Perspective.....	6793
<i>Teodora-Mihaela TARCZA, Sefora Marcela NEMȚEANU, Adela-Laura POPA and Naiana Nicoleta ȚARCĂ</i>	
Online Communication of Corporate Social Responsibility Actions by Hotels in Romania.....	6804
<i>Olimpia BAN and Adela Laura POPA</i>	
Researchers Approaches on Innovation Process in the Construction Sector.....	6816
<i>Dorin MAIER</i>	
The Role of Social Responsibility in the Development of Sustainable Businesses.....	6825
<i>Dorin MAIER and Horea S. DAN</i>	
Practical Aspects of Useful Life Calculation for Fixed Assets in Ifrs Reports.....	6833
<i>Tatyana Viktorovna MOROZOVA and Liubov LEHOX</i>	
Market Forecasting by the International Security Cultural Forecasting Method on the Example of One-Man Executive Bodies of the Two Most Important Companies in the Internet Services Industry.....	6841
<i>Marcin GÓRNIKIEWICZ</i>	
Development of Land Relations and Mortgage Loaning of Agricultural Enterprises in the Context of Modern Conditions.....	6847
<i>Serge KOLOTUKHA, Nataliia GVOZDEJ, Oksana VINNYTSKA, Liudmyla CHVERTKO and Tetiana KORNIIENKO</i>	
Economic Achievements of Romanian Agriculture Related to the Entrepreneurship Level.....	6857
<i>Mihai DINU and Bogdan CHIRIPUCI</i>	
The Failure of Poverty Reduction Strategy Implementation in the Republic of Chad: A Review.....	6861
<i>Khalil Abakar MOUSSA KAYA, Abd Rahman AHMAD, Amina @ Ganama MOUSTAPHA GUEME, Ali OROZI SOUGUI, Muhammad FARAZ MUBARAK and Djamal HISSEIN DIDANE</i>	

The Determinants of Local Government Financial Imbalance: A Preliminary Analysis

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Abstract

This research resulted from a theoretical framework, with special focus on financial imbalance in local government, studying the determinants of that imbalance. All Portuguese local authorities were analysed for the period 2014 to 2016, by testing the empirically formulated research hypotheses using the econometric model of logistic regression. The results obtained show that a larger population under 15 years old and over 65, financial independence, transfers from central government and investment expenditure are less likely to produce situations of financial imbalance in local authorities. Political ideology, the existence of political alternation in government and local authorities with greater capital income and greater expenditure on staff are the explanatory variables of municipal financial imbalance. No statistical evidence was found for the variables of population size, population density, location, purchasing power index and form of governance.

Keywords: Financial efficiency; Municipalities; Local Government.

Introduction

Transfers from central government and local authorities' own income are not sufficient to meet their responsibilities (Carvalho and Teixeira, 2007; Cabasés, Pascual, and Vallés, 2007). Local authorities need to find other forms of finance, through recourse to credit, thereby producing excessive debt (Lobo and Ramos, 2009).

Unmeasured use of debt by local authorities and excessive debt means financial imbalance, leading to interest and public discussion concerning what is behind this aspect (Lobo, 2012).

This problem has existed over the years, on which local public finance has focused through publishing various legal documents defining ways to "correct" imbalance in local public accounts. The most recent measure has to do with recourse to financial recovery mechanisms in an attempt to correct local financial imbalance (Almeida, 2016), introduced by Law n° 73/2013, of September, which establishes the current Financial Regime of Local Authorities and Inter-municipal Entities (RFALEI).

However, many types of mechanism, despite contributing an improved financial situation in various local authorities, have not been sufficient to put an end to some existing situations of municipal financial imbalance.

Therefore, the aim here is to study the determinants of financial imbalance in the 308 Portuguese local authorities, in the period 2014 to 2016. The intention is to contribute to local authorities having information allowing them to develop more efficient and sustainable financial management in controlling public money, through more efficient decision-making by both local authority executives and controlling bodies.

The study is structured in four sections. After the introduction, a theoretical framework of the determinants of financial imbalance is presented, focusing on local authorities. The third section presents the empirical study. This defines the objective and research hypotheses, the data treatment method and the variable studied, as well as presenting the analysis and discussion of results. Finally, the main conclusions are presented.

Determinants of Financial Imbalance

In terms of theory, recent years have seen greater importance attributed to the topic of local authority sustainability, defined as local government's capacity to deliver services in the present without jeopardizing the capacity to do so in the future, in order to give local governments necessary information for their decision-making, with a view to financial balance (Burritt and Schaltegger, 2010). The context emphasizes concern about providing political decision-makers with the right instruments to be able to understand/react and/or prevent situations of financial imbalance.

Various causes can contribute to increased municipal debt, leading to situations of financial imbalance. Pereira, Dias and Almeida (2016) highlight socio-economic changes and the lack of management capacity as the main determinants of increased municipal debt, by creating conditions for the development of investment policies, beyond local authorities' financial capacity, in order to retain population, particularly in areas of low population density, and the adoption of management strategies that lead to exceeding budgets and consequently increased municipal debt.

Pereira, Dias and Almeida (2016, pp.148-149) point out it is possible to distinguish the causes related to phenomena of increased municipal debt, highlighting the following possible determinants:

- “a) Increased municipal expenditure at a higher rate than that of effective income tends to lead, in the short or long term, to financial imbalance;*
- b) Cases of inefficient municipal management, usually associated with the practice of exceeding budgets through artificial inflation of income in order to gain the capacity to take on responsibility (commitments) for amounts far greater than income effectively received, with the effect of considerably increasing municipal debt; and,*
- c) Taking on expenditure associated with ensuring support for interest groups, namely of a social, cultural, sporting or religious nature, through granting subsidies and transfers to the respective associations, ensuring their operations, investment in projects of public interest or simply regular activities.”.*

Other studies emphasize that the structure of the population, especially population growth, can affect local authorities' economic wealth. Here, population growth increases the demand for resources and services (Wang and Liou, 2009; Balaguer-Coll, Prior, and Ausina, 2010; Balatsky, Balatsky, and Borysov, 2015), which leads to increased local public expenditure, but often without the corresponding increase in public income, since increased income received does not only depend on population growth but also on the population's financial capacity and economic activity. Indeed, unequal population growth between regions has a different effect on regional needs for the provision of services such as water, refuse collection, energy, food, health or education (Choi, Bae, Kwon, and Feiock, 2010), influencing regional economic development. Therefore, increased population can bring about an increased number of loans and public expenditure, increasing municipal debt (Choi, Bae, Kwon, and Feiock, 2010; Guillamón; Benito, and Bastida, 2011; Balaguer-Coll, Prior, and Ausina, 2010), consequently leading to situations of financial imbalance.

More specifically, Kloha, Weissert and Kleine (2005) believe that the proportion of the population over 65 and under 16 is inversely related to municipal income and expenditure and has a significant influence on increased financial stress, and can therefore affect the local authority's sustainable economic development. The needs of the dependent population (under 16 and over 65) lead to an increased supply of public services by local authorities. So that population has a negative influence on expenditure *per capita* (Choi, Bae, Kwon, and Feiok, 2010) and taxation, and consequently on local authorities' financial capacity, leading to a situation of financial imbalance (Gómez, Hernández, and Bastida, 2009; Bolívar, Galera, Muñoz, and Subires, 2016). Lobo (2012) studied the variables listed for the situation in Portuguese local authorities, but considering the age of the dependent population as under 15 and over 65.

Gross domestic product (GDP) is also considered an important factor in relation to the municipal financial situation. Studies show that GDP affects fiscal income (Easterly and Rebelo, 1993) and public debt (Feld and Kirchgässner, 1999).

From another perspective, and similarly to studies dealing with local debt (Ferreira, 2011; Bastida, Beyaert, and Benito, 2012; Ribeiro, Jorge, and Oliver, 2012) in financial imbalance (Lobo, 2012), another category of variables can be mentioned as potentially adding to factors explaining financial imbalance. Frequently studied are the variables of governing majority, political ideology and political alternation, finding a negative relationship between "governing majority" and total municipal debt.

Concerning the approach dealing with economic factors, Ladd and Yinger (1989) indicate changes in a territory's economic and social environment as factors potentially determining municipal financial imbalance. They point out that reduced fiscal capacity comes from rigorous limitation arising from a change in the universe of each local authority's taxpayers.

Other authors argue that local authority management has a primary role in budget execution. Local authorities sometimes find themselves with insufficient income to cover expenditure taken on, and it is necessary to obtain short-term finance. For example, Martin (1982) indicates political and financial management as a determinant factor of local authority budget imbalance, emphasizing that as deficits accumulate and local authorities no longer have capacity to meet their commitments to lenders, financial imbalance increases as well as the difficulty in providing fundamental public services.

Also indicated as possible determinants of financial imbalance are variables related to financial aspects (Cabasés, Pascual, and Vallés, 2007; Macedo and Corbari, 2009; Ferreira, 2011; Lobo, 2012), these being expenditure on staff, fiscal income, own income and investment expenditure.

Empirical Study

Objective, Research Hypotheses and variables

Considering the review of the theoretical and empirical literature, and to complement the results obtained in the various studies, particularly those carried out on the Portuguese situation, this research aims to identify the determinants of financial imbalance in local authorities in Portugal, for the years 2014 to 2016.

It aims therefore to answer the following research question: What are the determinants of municipal financial imbalance?

Answering the question formulated will help to understand the problem better, and could contribute to those in charge of local authorities being able to make decisions pro-actively in order to avoid their financial imbalance.

To fulfil the objective proposed, socio-demographic (related to the social, demographic and economic situation), political and financial/budgetary (fundamentally related to budget management) hypotheses are defined, considering those studied and indicated in the literature.

With the first group of hypotheses, characterising local authorities in economic, social and demographic terms, as in Lobo (2012), the intention is to test whether disparities, concerning both the level of potential to obtain own income and the need to carry out local public expenditure, are relevant in explaining municipal financial imbalance. To a certain extent, the group of variables to be used are factors affecting, indirectly, municipal budgetary and financial management (Lobo, 2012).

The group of political hypotheses allow us to test whether local authority performance is influenced by the contingencies of political decision-making (Lobo, 2012; Pereira, Dias, and Almeida, 2016). That is, this group of variables aims to assess how political interests can influence local authorities' budgetary and financial management.

The last group of financial/budgetary hypotheses represents, in financial terms, the management options of local authorities' executive body.

Socio-demographic hypotheses

H₁: Municipal financial imbalance is influenced by population size.

H₂: Municipal financial imbalance is influenced by population density.

H₃: Municipal financial imbalance is influenced by the population under 15 years old.

H₄: Municipal financial imbalance is influenced by the population over 65 years old.

H₅: The local authority's location (coastal or inland) influences municipal financial imbalance.

H₆: Municipal financial imbalance is influenced by purchasing power index (IPC).

Political hypotheses

H₇: Municipal financial imbalance is influenced by the form of governance.

H₈: Municipal financial imbalance is influenced by the executive's political ideology.

H₉: Municipal financial imbalance is influenced by political alternation of the mayor.

Financial/budgetary hypotheses

H₁₀: Municipal financial imbalance is influenced by financial independence.

H₁₁: Municipal financial imbalance is influenced by capital income.

H₁₂: Municipal financial imbalance is influenced by transfers from central government.

H₁₃: Municipal financial imbalance is influenced by investment expenditure.

H₁₄: Expenditure on staff influences municipal financial imbalance.

In keeping with the aim of this research, municipal financial imbalance was defined as the variable to study. According to number 1 of art. n° 52 of RFALEI, and as already mentioned, a local authority is in a situation of financial imbalance whenever the total debt of the budget operations of the municipality, including that of the entities stipulated in article n° 54 of the same law, on 31 December each year reach or exceed 1.5 times the average net current income of the previous three years, including loans, financial leasing contracts or any other forms of debt from financial institutions and other parties.

Local authorities finding themselves in a situation of financial imbalance can turn to financial recovery mechanisms (art. n° 57 of RFALEI), namely, municipal financial restructuring and financial recovery. In this context, considering that different levels of financial imbalance are studied, according to the financial recovery mechanisms they can turn to, one main variable and various secondary ones are defined.

Table 1: Summary of the variables and research hypotheses

Group of Variables	Research hypotheses	Variable	Abbreviation	Source	Expected signal
Sociodemographic	H ₁	Population size	DIM	PORDATA	+/-
	H ₂	Population density	DENS_POP	PORDATA	+/-
	H ₃	Population under 15 years old	POP_15	PORDATA	+
	H ₄	Population over 65 years old	POP_65	PORDATA	+
	H ₅	Location	LOC	National Program for Territorial Cohesion	+
	H ₆	Purchasing power index	IPC	PORDATA	-
Politics	H ₇	Form of governance	FOR_GOV	National Election Commission	+/-
	H ₈	Political ideology.	IDEOL	National Election Commission	-
	H ₉	Political alternation	ALT_POL	National Election Commission	+/-
Financial/Budgetary	H ₁₀	Financial independence	IND_FIN	Municipal Portal	-
	H ₁₁	Capital income	REC_CAP_PC	Municipal Portal	-
	H ₁₂	Transfers from central government	TRANSF_AC_PC	Municipal Portal	+/-
	H ₁₃	Investment expenditure	INV_PC	Municipal Portal	+
	H ₁₄	Staff expenditure	DES_PESS_PC	Municipal Portal	+

The main variable, financial imbalance (DESQ_FIN) will take the value of '1' when for the period chosen (2014, 2015 and 2016), the total debt of municipal budget operations on 31 December reaches or exceeds 1.5 times the average net current income of the previous three years. It will take the value of '0' otherwise, i.e., when the value is below 1.5. This is a dichotomic variable, since it presents one or other of two possibilities (Delgado and Gutiérrez, 1999; D'Ancona, 1999).

Considering that adopting financial recovery mechanisms is optional or obligatory according to the level of financial imbalance found on 31 December each year, and to deepen the analysis, some secondary variables were defined, considering those levels:

- Financial restructuring (SAN_FIN) if the total debt of municipal budget operations on 31 December is between 1.5 and 2.25 times the average of net current income in the previous three years;
- Obligatory financial restructuring or financial recovery (SAN_REC_FIN) if the total debt of municipal budget operations on 31 December is between 2.25 and 3 times the average of net current income in the previous three years;
- Obligatory financial recovery (REC_FIN) whenever the local authority is in a situation of financial collapse, i.e., if the total debt of its budget operations on 31 December is more than 3 times the average of net current income in the previous three years.

As with the main variable, the secondary variables will also take the value of ‘1’ when within the conditions defined for each, and ‘0’ otherwise.

Statistical Treatment

To study the determinants of municipal financial imbalance, dependent variables of the dichotomic nominal type will be used, taking the value of “1” or “0”, depending on the level of compliance, or otherwise, with the requisites defined for them. In this connection, Marôco (2018) states that logistic regression allows modelling the occurrence, in probabilistic terms, of one of the two events of the variable classes. According to this author, this also allows assessment of the significance of each independent variable in the model.

In this context, to fulfil the research aim, a Logit model will be used, and so the following models will be tested:

$$\begin{aligned} \text{DESEQ_FIN} = & \beta_0 + \beta_1\text{DIM} + \beta_2\text{DENS_POP} + \beta_3\text{POP_15} + \beta_4\text{POP_65} + \beta_5\text{LOC} + \beta_6\text{IPC} + \\ & \beta_7\text{FOR_GOV} + \beta_8\text{IDEOL} + \beta_9\text{ALT_POL} + \beta_{10}\text{IND_FIN} + \beta_{11}\text{REC_CAP_PC} + \\ & \beta_{12}\text{TRANSF_AC_PC} + \beta_{13}\text{INV_PC} + \beta_{14}\text{DESP_PESS_PC} + \varepsilon_l \end{aligned}$$

[1]

$$\begin{aligned} \text{SAN_FIN} = & \beta_0 + \beta_1\text{DIM} + \beta_2\text{DENS_POP} + \beta_3\text{POP_15} + \beta_4\text{POP_65} + \beta_5\text{LOC} + \beta_6\text{IPC} + \\ & \beta_7\text{FOR_GOV} + \beta_8\text{IDEOL} + \beta_9\text{ALT_POL} + \beta_{10}\text{IND_FIN} + \beta_{11}\text{REC_CAP_PC} + \\ & \beta_{12}\text{TRANSF_AC_PC} + \beta_{13}\text{INV_PC} + \beta_{14}\text{DESP_PESS_PC} + \varepsilon_l \end{aligned}$$

[2]

$$\begin{aligned} \text{SAN_REC_FIN} = & \beta_0 + \beta_1\text{DIM} + \beta_2\text{DENS_POP} + \beta_3\text{POP_15} + \beta_4\text{POP_65} + \beta_5\text{LOC} + \beta_6\text{IPC} + \\ & \beta_7\text{FOR_GOV} + \beta_8\text{IDEOL} + \beta_9\text{ALT_POL} + \beta_{10}\text{IND_FIN} + \beta_{11}\text{REC_CAP_PC} + \\ & \beta_{12}\text{TRANSF_AC_PC} + \beta_{13}\text{INV_PC} + \beta_{14}\text{DESP_PESS_PC} + \varepsilon_l \end{aligned}$$

[3]

$$\begin{aligned} \text{REC_FIN} = & \beta_0 + \beta_1\text{DIM} + \beta_2\text{DENS_POP} + \beta_3\text{POP_15} + \beta_4\text{POP_65} + \beta_5\text{LOC} + \beta_6\text{IPC} + \\ & \beta_7\text{FOR_GOV} + \beta_8\text{IDEOL} + \beta_9\text{ALT_POL} + \beta_{10}\text{IND_FIN} + \beta_{11}\text{REC_CAP_PC} + \\ & \beta_{12}\text{TRANSF_AC_PC} + \beta_{13}\text{INV_PC} + \beta_{14}\text{DESP_PESS_PC} + \varepsilon_l \end{aligned}$$

[4]

Presentation and Analysis of the Results

The results of estimating the model are presented, where the main model (SOCDEM_POL_FIN-ORÇ) includes the socio-demographic, political and financial/budgetary variables. In the partial models, estimation was made, individually, for each group of factors. So Model 1 relates to socio-demographic factors (SOCDEM), Model 2 to political factors (POL) and Model 3 to financial/budgetary factors (FIN-ORÇ).

The results of estimating the partial models confirm that for a great many variables, the results are quite consistent with those from estimation of the main model. Therefore, analysis of the results of the model (SOCDEM_POL_FIN-ORÇ) is now presented.

The Maximum Likelihood test presents results leading to the conclusion that in the model there is at least one independent variable with predictive power over municipal financial imbalance. The Pseudo-R² value is 0,135, meaning that the explanatory variables of the model explain 13,5% of the variations occurring in financial imbalance (DESEQ_FIN).

Concerning the Hosmer and Lemeshow adjustment test, the model estimated is found to adjust to the data, as the test values obtained are above 0,05. Therefore, the null hypothesis of model suitability is not rejected, with the conclusion that it forecasts the situation reasonably well.

The cases correctly foreseen obtained by the model favour its application. Accordingly, the model estimated predicts correctly around 85% of the observed values of municipal financial imbalance (DESEQ_FIN).

Considering the values of the tests presented above, we can conclude that the model presents good significance and quality of adjustment.

Regarding the significance of the logistic regression coefficients, analysis will only be made of those presenting statistically significant values (POP_65, ALT_POL, IND_FIN, REC_CAP_PC, TRANSF_AC_PC, INV_PC and DES_PESS_PC).

Concerning POP_65, it is confirmed that the larger the population over 65, the lower the probability of the local authority becoming financially imbalanced. Therefore, the values of the estimation allow the conclusion that an increase of one unit in this variable implies a reduction of 0,011% [Exp(-4.542)] in the likelihood of the local authority being financially imbalanced.

Local authorities where there is political alternation (ALT_POL) present a greater possibility of being financially imbalanced. It is observed that the likelihood of a local authority with alternation of the governing party being financially imbalanced is approximately 110% [(Exp(0,741) - 1) x 100] greater than in those where this alternation does not occur.

Table 2: Estimation of the model – Financial imbalance

Variable	DESEQ_FIN	DESEQ_FIN	DESEQ_FIN	DESEQ_FIN
	SOCDEM	POL	FIN-ORÇ	SOCDEM_POL_FIN-ORÇ
	(1)	(2)	(3)	(4)
DIM	0,088 (3,41)			0,326 (1,30)
DENS_POP	-0,000137 (-0,59)			-0,0000493 (-0,20)
POP_15	-1,841 (-0,46)			-1,161 (-0,25)
POP_65	-6,777*** (-3,56)			-4,542* (-2,07)
LOC	-0,449 (-1,74)			-0,378 (-1,88)
IPC	-0,00799 (-1,12)			-0,0160 (-1,88)
FOR_GOV		-0,218 (-0,88)		-0,380 (-1,39)
IDEOL		0,0885 (0,47)		0,0925 (0,44)
ALT_POL		0,759*** (3,95)		0,741*** (3,62)
IND_FIN			-1,272*** (-4,31)	-1,147*** (-3,52)
REC_CAP_PC			0,00478*** (5,86)	0,00456*** (5,29)
TANSF_AC_PC			-0,00210*** (-3,57)	-0,00237*** (-3,31)
INV_PC			-0,00336** (-2,89)	-0,00245* (-2,12)

DES_PESS_PC			0,00182	0,00287*
			(1,70)	(2,42)
_cons	0,825	-1,771***	-1,068***	0,817
	(0,80)	(-6,69)	(-4,64)	(0,64)
Maximum Likelihood Test	19,45	18,26	81,89	109,30
	(0,0035)	(0,0004)	(0,0000)	(0,0000)
Hosmer and Lemeshow Test	7,4	6,76	8,93	8,41
	(0,2852)	(0,0799)	(0,1121)	(0,2098)
Correctly Predicted Cases	84,09%	84,09%	85,50%	85,17%
Pseudo - R ²	0,024	0,023	0,101	0,135
N	924	924	924	924

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In relation to financial independence (IND_FIN), the statistical significance observed indicates that the likelihood of a local authority with financial independence being financially imbalanced is approximately 28% $[(\text{Exp}(-1.147) - 1) \times 100]$ less than those in the alternative situation.

Capital income (REC_CAP_PC) and expenditure on staff (DES_PESS_PC) present a positive relationship with the likelihood of a local authority being financially imbalanced. The results validate the idea that an increase of one unit in REC_CAP_PC implies an increase of 1,0% $[\text{Exp}(0,00456)]$ in the possibility of the local authority being financially imbalanced. For DES_PESS_PC the percentage is exactly the same $[\text{Exp}(0,00287)]$.

On the other hand, contrasting with REC_CAP_PC and DESP_PESS_PC, transfers from central government (TRANSF_AC_PC) and investment (INV_PC) show a negative relationship with the likelihood of a local authority being financially imbalanced. So an increase of one unit in TRANSF_AC_PC implies a reduction of 1,0% $\text{Exp}(-0.00237)$ in the possibility of the local authority being financially imbalanced. For INN_PC the percentage is exactly the same $\text{Exp}(-0,00245)$.

Table 3: Estimation of the models for the different levels of financial imbalance

Variable	DESEQ_FIN	SAN_FIN	SAN_REC_FIN	REC_FIN
	(1)	(2)	(3)	(4)
DIM	0,326 (1,30)	0,323 (1,05)	1,019 (1,82)	-0,464 (-1,03)
DENS_POP	-0,0000493 (-0,20)	0,0000276 (0,11)	0,0000950 (0,12)	-0,000368 (-0,50)
POP_15	-1,161 (-0,25)	-0,0460 (-0,08)	-15,97* (-2,01)	-0,0306 (-0,12)
POP_65	-4,542* (-2,07)	-6,327** (-2,73)	-4,167 (-1,04)	-3,763 (-1,05)
LOC	-0,378 (-1,88)	-0,570 (-1,68)	-0,917 (-1,47)	0,385 (0,76)
IPC	-0,0160 (-1,88)	-0,0108 (-1,07)	-0,00204 (-0,11)	-0,0121 (-0,76)
FOR_GOV	-0,380 (-1,39)	-0,425 (-1,27)	-0,343 (-0,64)	-0,333 (-0,67)
IDEOL	0,0925	0,600*	-0,421	-0,690

	(0,44)	(2,40)	(-0,87)	(-1,65)
ALT_POL	0,741***	0,646*	1,443***	0,202
	(3,62)	(2,57)	(3,33)	(0,53)
IND_FIN	-1,147***	-0,919*	-3,787**	-0,428
	(-3,52)	(-2,30)	(-2,72)	(-0,79)
REC_CAP_PC	0,00456***	0,000361	0,00219***	0,00134***
	(5,29)	(0,84)	(3,68)	(3,33)
TANSF_AC_PC	-0,00237***	-0,00149	-0,00129	-0,00171
	(-3,31)	(-1,86)	(-0,94)	(-1,50)
INV_PC	-0,00245*	0,000162	-0,00632	0,000688
	(-2,12)	(0,13)	(-1,95)	(0,45)
DES_PESS_PC	0,00287*	0,00256	0,00284	0,00112
	(2,42)	(1,79)	(1,18)	(0,53)
_cons	0,817	-0,206	-1,226	0,0250
	(0,64)	(-0,19)	(-0,52)	(0,02)
Maximum Likelihood Test	109,30	38,02	59,99	25,18
	(0,0000)	(0,0005)	(0,0000)	(0,0328)
Hosmer and Lemeshow Test	8,41	11,91	29,41	16,01
	(0,2098)	(0,0640)	(0,0001)	(0,0137)
Correctly Predicted Cases	85,17%	91,13%	96,97%	96,10%
Pseudo - R ²	0,135	0,069	0,233	0,083
N	924	924	924	924
* p<0.05, ** p<0.01, *** p<0.001				

For better understanding of the factors determining financial imbalance, the logistic regression model was estimated for the different levels according to the financial recovery mechanism they can turn to (financial restructuring (SAN_FIN), obligatory financial restructuring or financial recovery (SAN_REC_FIN) and obligatory financial recovery (REC_FIN). The intention is to understand whether the determinants vary according to the levels of financial imbalance.

The results of the Maximum Likelihood test for SAN_FIN, SAN_REC_FIN and REC_FIN lead to the conclusion that for the different models there is at least one independent variable with predictive power over municipal financial imbalance. The Pseudo-R² value is relatively low in the SAN_FIN and REC_FIN models, respectively 0,069 and 0,083. In the SAN_REC_FIN model, the Pseudo-R² is much higher (0,233), meaning that the independent variables of the model explain 23,3% of the variations occurring in it.

The correctly predicted cases obtained in the different models favour its application. The models estimated predict correctly 91,13%, 96,97% and 96,10% of the values observed, respectively, in SAN_FIN, SAN_REC_FIN and REC_FIN.

The result of the Hosmer and Lemeshow adjustment test in the SAN_FIN model is above 0,05, and so the null hypothesis of suitability of the model is not rejected, with the conclusion that it provides a reasonable prediction of the situation. In the SAN_REC_FIN and REC_FIN models, the test values seem to show the estimation is not adjusted to the data.

Overall, the secondary models can be considered to present statistical significance and quality of adjustment.

Analysis of the logistic regression coefficients reveals that the variables of POP_65, IDEOL, ALT_POL and IND_FIN influence the likelihood of local authorities being in financial restructuring (SAN_FIN). POP_65 and IND_FIN present a negative relationship, while IDEOL and ALT_POL are positive.

As for the SAN_REC_FIN model, the variables of POP_15, ALT_POL, IND_FIN and REC_CAP_PC are seen to influence the probability of local authorities being in obligatory restructuring or financial recovery. The relationship of POP_15 and IND_FIN is negative, whereas that of ALT_POL and REC_CAP_PC is found to be positive.

Finally, the REC_FIN model only presents one variable with statistical significance, REC_CAP_PC. Therefore, and due to the positive sign, it can be stated that the greater capital income, the greater the probability of the local authority needing financial recovery.

The following table presents a summary of the results of estimating the different models, showing the sign of the coefficient of the variables presenting statistically significant values. It stands out that the sign obtained in the statistically significant variables of the main model (DESEQ_FIN) are maintained when the secondary models (SAN_FIN, SAN_REC_FIN and REC_FIN) are validated.

Table 4: Summary of the results of estimating the main and secondary models.

Variable	DESEQ_FIN	SAN_FIN	SAN_REC_FIN	REC_FIN
	(1)	(2)	(3)	(4)
DIM				
DENS_POP				
POP_15			(-)*	
POP_65	(-)*	(-)**		
LOC				
IPC				
FOR_GOV				
IDEOL		(+)*		
ALT_POL	(+)**	(+)*	(+)**	
IND_FIN	(-)**	(-)*	(-)**	
REC_CAP_PC	(+)**		(+)**	(+)**
TANSF_AC_PC	(-)**			
INV_PC	(-)*			
DES_PESS_PC	(+)*			
* p<0.05, ** p<0.01, *** p<0.001				

Discussion of the Results

Based on the statistical significance obtained in estimating the various models, four of the fourteen hypotheses formulated are validated. It is of note, however, that statistically significant evidence was obtained for nine variables that present predictive power regarding municipal financial imbalance.

Concerning the hypotheses related to socio-demographic factors, none is found to be validated. It is noted however that the research hypotheses related to POP_15 and POP_65 present statistical significance, but contrary to that initially defined. This finding confirms that, contrary to what would be expected and defended by Gómez, Hernández and Bastida (2009), Lobo (2012) e Bolívar, Galera, Muñoz and Subires (2016),, the greater the population under 15 and over 65, the lower the likelihood of the local authority being in a situation of financial imbalance. This evidence may be explained as follows: support for the elderly is usually assured by social welfare institutions, and so local authorities do not spend vast sums to meet the needs of this age-group; local authorities' commitments in relation to educating young people originate expenditure which is in fact financed by central government.

Table 5: Results and estimation of the research hypotheses

Hypothesis	Variable	Expected Relationship	Result Obtained	Validated hypotheses
H ₁	DIM	(+/-)		
H ₂	DENS_POP	(+/-)		
H ₃	POP_15	(+)	(-)	
H ₄	POP_65	(+)	(-)	
H ₅	LOC	(+)		
H ₆	IPC	(-)		
H ₇	FOR_GOV	(+/-)		
H ₈	IDEOL	(-)	(+)	
H ₉	ALT_POL	(+/-)	(+)	✓
H ₁₀	IND_FIN	(-)	(-)	✓
H ₁₁	REC_CAP_PC	(-)	(+)	
H ₁₂	TANSF_AC_PC	(+/-)	(-)	✓
H ₁₃	INV_PC	(+)	(-)	
H ₁₄	DES_PESS_PC	(+)	(+)	✓

Concerning the hypotheses related to political factors, the results only allow validation of H₉ . In this context, corroborating the opinions of Lobo (2012) and Coll, Martos, Forte and Ausina (2014), there is evidence that if the local authority executive alternates in terms of the ruling party, it will be more likely to present a situation of financial imbalance. This may be originated by mayors, feeling they may lose the next election to another party, carrying out expenditure without great concern. This can give rise to the need to turn to debt, and a possible situation of financial imbalance.

The results do not allow validation of H₈, but the variable presents statistically significant values, leading to the conclusion that, contrary to expectations, right-wing parties have a greater tendency to leave local authorities in a situation of financial imbalance.

As for the financial/budgetary hypotheses, the results validate hypotheses H₁₀, H₁₂ and H₁₄. Validation of H₁₀ leads to the conclusion that local authorities with financial independence are those least likely

to present a situation of financial imbalance. This finding is in agreement with the argument of Bastida and Benito (2005), Mier (2011) and Lobo (2012), i.e., that greater capacity to obtain own income reduces the need to contract loans, thereby reducing the likelihood of entering a situation of financial imbalance.

Local authorities with larger transfers from central government are those least likely to be in a situation of financial imbalance. This finding validates H_{12} , which is in agreement with Gómez, Díaz, López and Hernández (2011) and Tovmo (2007). Transfers from central government reduce the need to turn to debt, and consequently the possibility of finding themselves in financial imbalance.

Validation of H_{14} corroborates the idea that if expenditure on staff is high, local authorities feel the need to seek alternative sources of finance for more productive expenditure, for example, investment, which can give rise to debt and thereby a greater probability of financial imbalance.

The results of estimating the models do not allow validation of H_{11} and H_{13} , since they show statistical significance with the opposite sign of that expected. This highlights the evidence that local authorities with greater capital income are those most likely to be in financial imbalance.

Finally, regarding H_{13} , local authorities with greater investment are less likely to present financial imbalance. The explanation may lie in the fact that a great deal of local authority investment is financed by central government, with no need to resort to debt. Validation of H_{12} , as explained above, corroborates this idea, since local authorities with greater transfers from local government show less likelihood of being in financial imbalance.

Conclusions

This study led to significant results arising from the line of research chosen concerning the determinants of financial imbalance in local authorities, seeking to answer the research question formulated: “what are the determinants of financial imbalance in local authorities?”

In this connection, the study analysed the determinants of local authorities’ financial imbalance, in the years 2014, 2015 and 2016, for the total universe (308) of Portuguese local authorities. The econometric model of logistic regression was used to test the research hypotheses formulated based on empirical studies, through collecting data from different sources.

The results obtained show that, in general, nine of the fourteen hypotheses formulated present statistical significance, indicating as explanatory determinants of local authorities’ financial imbalance: the population under 15 years of age, the population over 65 years of age, political ideology, political alternation, financial independence, capital income per capita, transfers per capita from central government, investment expenditure per capita and expenditure on staff per capita.

In particular, the results obtained indicate that local authorities with a greater proportion of population under 15 and over 65, financial independence, greater transfers per capita from central government and greater investment expenditure per capita are less likely to present financial imbalance. On the other hand, when local authorities are governed by right-wing parties, with alternation of the executive body, have high expenditure on staff and have greater capital income per capita, they seem to be more likely to be in a situation of financial imbalance.

Given these results, it is considered they can be relevant for political policy-makers and managers interested in promoting financial balance in local government. The results obtained are therefore understood to indicate the relevance of the majority of the determinants analysed for the probability of situations of financial imbalance in local authorities. The research proved to be relevant, as it presents in detail the potential for local authorities to enter financial restructuring and recovery contracts arising from situations of financial imbalance.

Some limitations were felt in this study, the first being in relation to the literature review, which although seeking to make it as complete as possible, a limited amount of theoretical-empirical literature was found.

From the above, and in connection with the limitation recognized in carrying out the research, more independent variables could have been included, besides those studied. A longer period of time could also have been considered.

Suggested for future research is the exploration of new variables, in addition to those analysed, thereby extending this study, or focusing on possible new strategies to follow, in order to enhance this study for a more wide-ranging discussion.

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Legislation

Law nº 73/2013, of 3 September. Financial Regime of Local Authorities and Intermunicipal Entities, Diário da República, 1st series, 169, 5499-5519.

References

- Almeida, M. (2016) 'A dívida das administrações locais e o fundo de apoio municipal.' In Pereira, P.; Dias, R., and Almeida, M. (Eds.). *Autarquias Locais: Democracia, Governação e Finanças* (pp. 147-170). Coimbra: Almedina.
- Balaguer-Coll, M., Prior, D., and Tortosa-Ausina, E. (2010) 'Decentralization and efficiency of local government'. *The Annals of Regional Science*, 45 (3), 571-601.
- Balatsky, A., Balatsky, G., and Borysov, S. (2015) 'Resource demand growth and sustainability due to increased world consumption.' *Economic, Business and Management Aspects of Sustainability*, 7 (3), 3430-3440.
- Bastida, F., and Benito, B. (2005) 'Análisis del endeudamiento en los ayuntamientos: un estudio Empírico Analysis of local governments indebtednes: an empirical study.' *Revista Española de Financiación y Contabilidad*, 126, 613-635.
- Bastida, F., Beyaert, A., and Benito, B. (2012) 'Electoral cycles and local government debt management.' *Local Government Studies*, 39 (1), 107-132.
- Bolívar, M., Galera, A., Muñoz, L., and Subires, M. (2016) 'Analyzing forces to the financial contribution of local governments to sustainable development.' *Economic, Business and Management Aspects of Sustainability*, 8 (925), 1-18.
- Burritt, R., and Schaltegger, S. (2010) 'Sustainability accounting and reporting: fad or trend?' *Accounting, Auditing and Accountability Journal*, 23 (7), 829-846.
- Cabasés, F., Pascual, P., and Vallés, J. (2007) 'The effectiveness of institutional borrowing restrictions: Empirical evidence from Spanish municipalities.' *Public Choice*, 131 (3-4), 293-313.
- Carvalho, J., and Teixeira, A. (2007) 'O Recurso ao crédito por parte das autarquias locais.' In Oliveira A. (Eds.), 30 anos de Poder Local na Constituição da República Portuguesa (pp. 116-123). Coimbra: Coimbra Editora.
- Choi, S., Bae, S., Kwon, S., and Feiock, R. (2010) 'County limits: policy types and expenditure priorities.' *The American Review of Public Administration*, 40 (1), 29-45.
- D'Ancona, M. (1999) *Metodologia cuantitativa; estratégia y técnicas de investigación social.* Madrid: Editorial Síntesis, S.A.

- Coll, M., Martos, M., Forte, A., and Ausina, E. (2014) 'Determinants of local governments' reelection: New evidence based on a Bayesian approach.' Working Papers, Economics Department, Universitat Jaume I, Castellon (Spain).
- Delgado, J., and Gutiérrez (1999) '*Metodos y técnicas cualitativas de investigación en ciencias sociales* (3ª ed.)' Madrid: Editorial Síntesis, S.A.
- Easterly, W., and Rebelo, S. (1993) 'Fiscal policy and economic growth. An empirical investigation.' *Journal of Monetary Economics*, 32 (3), 417-458.
- Feld, L., and Kirchgässner, G. (1999) 'Public debt and budgetary procedures: top down or bottom up? Some evidence from Swiss municipalities.' In Poterba, J. et al. (Eds) *Fiscal Institutions and Fiscal Performance* (pp.151-180). Chicago, IL: University of Chicago Press.
- Ferreira, F. (2011) '*Determinantes do endividamento municipal em Portugal* (Master dissertation).' Universidade do Minho - Escola de Economia e Gestão, Braga.
- Gómez, J., Díaz, A., López, G., and Hernández, A. (2011) 'Influencia de los factores económico-financieros, políticos y de las formas de gestión sobre el nivel de la deuda viva en las entidades locales usando una metodología de datos de panel.' Conference: XVIII Encuentro de Economía Pública.
- Gómez, J., Hernández, A., Bastida, A. (2009). 'Developing an alert system for Local Governments in Financial Crisis.' *Public Money Management*, 29, 175-181.
- Guillamón, D., Benito, B., and Bastida, F. (2011) 'Evaluación de la deuda pública local en España.' *Revista Española de Financiación y Contabilidad*, 150(XI), 251-285.
- Kloha, P., Weissert, C., and Kleine, R. (2005) 'Someone to watch over me, State monitoring of local fiscal conditions.' *American Review of Public Administration*, 35 (3), 236-255.
- Ladd, F., and Yinger, J. (1989) 'The determinants of state assistance central cities.' *National Tax Journal XLII* (4), 413-428.
- Lobo, F. (2012) '*A descentralização orçamental e o endividamento público subnacional: uma aplicação aos municípios portugueses* (Ph.D. thesis).' Universidade de Coimbra, Coimbra.
- Lobo, F., and Ramos, P. (2009) 'Análise do regime jurídico do endividamento dos municípios em Portugal – A Nova Lei das Finanças Locais.' 15º Congresso da Associação Portuguesa de Desenvolvimento Regional.
- Macedo, J., and Corbari, E. (2009) 'Efeitos da Lei de Responsabilidade Fiscal no endividamento dos municípios brasileiros: uma análise de dados em painéis.' *Revista Contabilidade e Finanças*, 20 (51), 44-60.
- Marôco, J. (2012) 'Análise estatística com o SPSS Statistics.' 7.ª Ed.. Pêro Pinheiro, ReportNumber.
- Martin, J. (1982) '*Urban financial stress: why cities go broke.*' Boston, Mass: Auburn House.
- Mier, M. (2011) 'Endeudamiento y ciclo político-presupuestario: aplicación a los municipios asturianos.' *Presupuesto y Gasto Público*, 65, 75-95.
- Pereira, P., Dias, R., and Almeida, M. (2016) '*Autarquias locais: democracia, governação e finanças.*' Coimbra: Almedina.
- Ribeiro, N., Jorge, S., and Oliver, M. (2012) '*Estudos do endividamento da Administração Local: evidência empírica usando modelos de dados em painel.*' XV Encontro AECA. Esposende.
- Tovmo, P. (2007) 'Budgetary procedures and deficits in Norwegian Local Governments.' *Economics of Governance*, 8(1), 37-49.
- Wang, X., and Liou, K. (2009) 'Assessing the change in financial condition: an analysis of panel data from U.S. States.' *Public Budgeting and Finance*, 21 (2), 165-197.