



ASSESSMENT OF THE EFFICIENCY OF THE TERRITORIAL ADMINISTRATIVE REORGANIZATION OF THE PARISHES OF THE DISTRICT OF BRAGA

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ABSTRACT

Purpose: The objective of this study was to identify whether the reorganization of parishes carried out in Portugal, in the District of Braga, in 2013, is the one that enhances the greatest efficiency gains.

Theoretical framework: The study is based on the relationship between financial sustainability, efficiency, and territory, seeking the optimal dimension of the local power unit.

Methodology: The study is based on the Data Envelopment Analysis method, using data from the parishes of the district of Braga in two moments, the year 2012 and the year 2015. For this year, a new territorial reorganization was also proposed and analysed.

Results and Conclusions: The reform increased efficiency in 10 of the 14 municipalities. However, it was possible to observe that a reorganization that gives the parishes a larger size, that is, closer to the average seen in the European Union, would bring average efficiency gains in all municipalities. Thus, it is concluded that the reform of the parishes carried out in 2013 in the district of Braga is not the one **that allows greater efficiency, since this can be enhanced if they benefit from a larger geographical scale.**

Research implications: The research contributes to the knowledge of the efficiency of territorial reforms, namely, regarding the impact of the dimension in this context, as well as to the evaluation of the public policy adopted, allowing the public decision-maker to make a sound and sustained decision.

Originality/value: This study is original because it studies smaller units of local government, the parishes, on which research is very incipient, namely in Portugal.

Keywords: Efficiency, Parishes of Braga, Financial Sustainability, Territory.

AVALIAÇÃO DA EFICIÊNCIA DA REORGANIZAÇÃO ADMINISTRATIVA TERRITORIAL DAS FREGUESIAS DO DISTRITO DE BRAGA

RESUMO

Objetivo: O objetivo deste estudo foi identificar se a reorganização de freguesias realizada em Portugal, no Distrito de Braga, em 2013, é a que potencia maiores ganhos de eficiência.

Referencial teórico: O estudo baseia-se na relação entre sustentabilidade financeira, eficiência e território, procurando a dimensão ótima da unidade de poder local.

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Metodologia: O estudo baseia-se no método de Análise Envoltória de Dados, utilizando dados das freguesias do distrito de Braga em dois momentos, o ano de 2012 e o ano de 2015. Para este ano foi também proposta e analisada uma nova reorganização territorial.

Resultados e conclusões: A reforma aumentou a eficiência em 10 dos 14 municípios. No entanto, foi possível observar que uma reorganização que desse às freguesias uma dimensão maior, ou seja, mais próxima da média observada na União Europeia, traria ganhos de eficiência médios em todos os municípios. Assim, conclui-se que a reforma das freguesias realizada em 2013 no distrito de Braga não é a que permite maior eficiência, uma vez que esta pode ser potenciada se beneficiarem de uma maior escala geográfica.

Implicações da pesquisa: A investigação contribui para o conhecimento da eficiência das reformas territoriais, nomeadamente, no que diz respeito ao impacto da dimensão neste contexto, bem como para a avaliação da política pública adoptada, permitindo ao decisor público tomar uma decisão acertada, e decisão sustentada.

Originalidade/valor: Este estudo é original porque estuda unidades mais pequenas da administração local, as freguesias, onde a investigação é muito incipiente, nomeadamente em Portugal.

Palavras-chave: Eficiência, Freguesias de Braga, Sustentabilidade Financeira, Território.

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1 INTRODUCTION

In the eurozone, the financial crisis experienced from 2008 onwards exposed, for countries such as Greece, Spain, and Portugal, a worrying situation concerning the sustainability of their public accounts, which led to the need to submit to adjustment programmes. Financial sustainability is currently one of the major concerns of countries, particularly when faced with high levels of debt and a growing scarcity of resources, which is largely determined by the efficient use of resources (Dinca, Dinca & Andronic, 2016).

In this context, one of the major trends that aimed to enhance the efficiency of the use of resources came from territorial reforms (Storto, 2013), in particular, the merger policies that have been implemented in many European countries (Hermerier, 2009). It should be noted that this type of reform has been a trend in Europe since the 1950s, and it has been argued that larger public units can be better providers of local services (Swianiewicz, Klimovský & Wollmann, 2010). Local governments are relevant in the economy and the lives of all citizens (Macêdo et al. 2021), which is demonstrated by the fact that 70% to 80% of public investments in Europe are made by local authorities (Schuster & Vallier, 2011).

Thus, the need to ensure the financial sustainability of countries has contributed to the territorial reforms that have been observed, particularly in countries subject to austerity measures and forced to reduce expenses (Swianiewicz, 2018). The territorial reorganisation of



parishes carried out in Portugal under the International Adjustment Programme is an example of this situation (Tavares & Teles, 2018; Swianiewicz, 2018).

The importance of efficiency and territory in Portugal was highlighted by the International Monetary Fund, the European Central Bank, and the European Union (EU) which, to reduce Portuguese public spending, imposed the need to reduce its number of municipalities. This territorial consolidation reform was implemented in 2013, only in the context of the parishes, having resulted in the extinction (by aggregation) of 29% of them, aiming, in particular, to strengthen the sustainability of the municipal structure by promoting gains in scale and efficiency.

The high number of parishes in Portugal (4,260 before the aforementioned reform, and 3,092 currently), resulted in the difficulty of studying their totality, so this paper proposes to study whether the Portuguese parishes territory reform (RATF, in the Portuguese acronym), carried out in the district of Braga, in 2013, is the one that enhances greater efficiency gains. The choice of Braga results from being the largest district in terms of the number of parishes, and having a great diversity, both in geographical area and in number of inhabitants.

Bearing in mind that the reform seems to have only aimed to reduce the number of parishes (Gato, 2014; Duarte, 2016; Alexandrino, 2018) and that the results of territorial reorganizations have not been consistent (Gendźwiłł et al., 2021; Swianiewicz, 2018), this research aims to contribute to the knowledge of the efficiency of territorial reforms, namely, regarding the impact of the size of each unit. A new territorial reorganization is also proposed to achieve the objectives defined by Portuguese law.

The study uses the Data Envelopment Analysis (DEA) method, and data from the parishes of the district of Braga in two moments, the year 2012 as the last year before the reform, and the year 2015 as the post-reform. The proposed territorial reorganization (applied to the year 2015) was also analyzed. Thus, all the parishes in the district are evaluated, that is 515 in 2012, 347 in 2015, and the 137 proposed.

According to Gendźwiłł et al. (2021), several researchers have focused on territorial reforms, highlighting the need to study the optimal size of local governments. Thus, the present research proposes to contribute to the literature in this context, based on the Portugal case.

This paper has five sections, including the current one. The second section concerns the theoretical review of the public sector efficiency and the reforms of the territory. In the third, the methodology is presented, followed by the results section. Finally, in the fifth section, the discussion of the results and the conclusion of the investigation are presented.



2 THEORETICAL FRAMEWORK

The need to ensure the financial sustainability of future generations has forced public management to adopt integrated efficiency strategies. Thus, increasing the efficiency of the public sector is currently one of the main challenges, which depends mostly on the efficiency of resource management (Ziębicki, 2014).

The crisis experienced by the eurozone since 2008 has revealed several weaknesses of the member states, some of which have had to ask for international help. In fact, as a result of the adjustment programmes to which several European countries have been subjected, namely Greece, Spain, and Portugal, several cross-cutting measures have been implemented, particularly those aimed at the territory, through the reduction of the number of local authorities. In this sense, Greece reduced the number of municipalities from 910 to 325, Spain from 8,100 to 5,900 and Portugal reduced the number of parishes from 4,260 to 3,092 (Gonzalez, 2017).

Globally, this topic is not new, and in recent decades there has been a tendency for central governments to enhance administrative efficiency through the merger of local governments (Baimuratov et al. 2023; Fox & Gurley, 2006; Swianiewicz *et al.*, 2010; Storto, 2013). The search for the perfect size as a guarantee of economic efficiency in the provision of public services is a growing concern in the EU (Hermenier, 2009), which has adopted structural measures aimed at providing countries with a more homogeneous territorial division, as well as correcting the existing disparities between the member states. However, despite these reorganisation measures, the territorial structure of the EU member states remains very diverse, with Malta having 0.215 local units per km², and Sweden, Lithuania, and Finland having only 0.001, for example.

The literature has focused on territorial reforms, especially their design, and consequences, emphasizing the need to debate the optimal size of local governments (Gendźwiłł et al., 2021), and the results of studies are often inconclusive as to the consequences of those reforms (Gendźwiłł et al., 2021; Swianiewicz, 2018). Thus, several authors argue that larger agglomerations enhance efficiency in the use of public money (Balaguer-Coll, Prior-Jiménez & Vela-Bargues, 2002; Fox & Gurley, 2006; Bönisch, Haug, Illy & Schreier, 2011; Tavares *et al.*, 2012; Drew & Grant, 2017). On the contrary, those who oppose it highlight the negative effects of such agglomeration, namely the great difficulty in coordinating a greater number of human resources, and the lower levels of transparency (Drew et al, 2014; Boyne, 1998).

Several studies have been carried out on the efficiency of local government units, mainly



municipalities, particularly regarding the assessment of their size, and there have been several that have applied the DEA method (Afonso & Fernandes, 2005; Afonso & Venâncio, 2013, 2019; Balaguer-Coll et al., 2002; Galić & Šehić, 2014; Gonzalez, 2017; Hužvár et al., 2016; Jorge, Camões, Carvalho & Fernandes, 2004); Saraiva, Nogueira & Silva, 2017; Skica et al., 2019; Storto, 2013). These studies have been carried out in several countries (such as Portugal, Spain, Bosnia and Herzegovina, Slovakia, Poland, and Italy) concluding that, in most cases, there is room for improvement and that larger local units tend to be more efficient.

The administrative reorganisation carried out in Portugal in 2013 was imposed as part of the adjustment programme to which it was subject (European Union, 2011). In this context, the Resolution of the Council of Ministers No. 40/2011, of 22 September, approved the guiding principles of the reform of local government which include the efficiency of the management and allocation of public resources, enhancing economies of scale, and strengthening the sustainability of the municipal structure.

The organization of the territory aimed to substantially reduce the number of parishes (through agglomeration, providing them with a more appropriate scale and dimension, taking into account their respective typologies, and ensuring that local specificities were safeguarded), providing for the elaboration of a matrix of demographic and geographical criteria, bearing in mind the typology resulting from the notions of predominantly urban parish, of a mostly urban parish, and a predominantly rural parish. That matrix was published in September 2011, through the Green Document for Local Administration Reform (2011), intending, through the agglomeration of parishes, to reduce population asymmetries.

Law No. 22/2012, of 30 May, established the following levels of framework and respective aggregation parameters:

- Level 1: Municipalities with a population density of more than 1,000 inhabitants per km² and with a population equal to or greater than 40,000 inhabitants – reduction of 55% in the number of parishes in urban territory, and 35% in the number of other parishes.
- Level 2: Municipalities with a population density of more than 1,000 inhabitants per km² and a population of fewer than 40,000 inhabitants, as well as municipalities with a population density between 100 and 1,000 inhabitants per km² and with a population equal to or greater than 25 000 inhabitants - reduction of 50% in the number of parishes in urban territory, and 30% in the number of other parishes.



- Level 3: Municipalities with a population density between 100 and 1,000 inhabitants per km² and with a population of fewer than 25,000 inhabitants, as well as municipalities with a population density of fewer than 100 inhabitants per km² - reduction of 50% in the number of parishes in urban territory, and 25% in the number of other parishes.

According to that diploma, the administrative reorganization of the parish's territory was not mandatory in municipalities with four or fewer parishes, nor could it result in parishes with less than 150 inhabitants. It also defined that, since the criteria were met, aggregation could be proposed voluntarily.

Despite the obligation to reorganise and significantly reduce the number of municipalities and parishes, the new municipal territorial organisation published by Law No. 11-A/2013, 28 January, only resulted in a reduction of parishes by 29%. The new map was mostly imposed by the Technical Unit for the Administrative Reorganization of the Territory (UTRAT, in the Portuguese acronym), an entity created to monitor the process, given that 168 parishes were forced to accept the new map, and only 61 opted for the new design (there are still 49 that have not changed) (Tavares & Teles, 2018). It should be noted that the reduction of parishes only took place in mainland Portugal, remaining the same in Madeira and Azores.

Several authors have concluded that this reform did not result in an expense reduction, with room for improvement regarding the efficiency of public spending (Afonso & Venâncio, 2013; Alexandrino, 2018), nor was it effective in harmonizing parish size, either in terms of area or population (Gato, 2014; Duarte, 2016).

As part of the evaluation of the territory reorganization, UTRAT sent a survey to 2,858 parishes, all those on the mainland except for the parishes located in the municipality of Lisbon. Only 1,166 responses were obtained, of which 456 responses were from aggregated parishes, and 710 from non-aggregated ones. Regarding the evaluation of the effectiveness and efficiency of public management, for 20% of the total parishes it has increased, for 26% it has remained the same, and for 10% it has decreased, while 44% did not answer the question (UTRAT, 2016). Concerning the aggregated parishes, 43% consider that there has been an increase in the effectiveness and efficiency of public management, 36% that it has maintained, and 21% that it has decreased. When trying to identify where that evolution had occurred, it was not possible to conclude due to the high number of parishes that did not answer the question (UTRAT, 2016).



3 METHODOLOGY

This study focuses on the district of Braga, the largest district in the number of parishes, and the one that "lost" the most parishes with the reform. Braga also has parishes very diversified, both in terms of geographical area and number of inhabitants.

Therefore, given the reorganization of the territorial map, it is important to study whether the reorganization of the parishes carried out in 2013 in the district of Braga is the one that enhances the greatest efficiency gains. For this purpose, the DEA method was used, where the analysis of the performance indicators allows observing, through linear programming techniques, a frontier that will correspond to the optimal performance between the Decision Making Units (DMU) analysed (Cooper, Seiford & Zhu, 2011).

To understand the variations resulting from the RATF carried out in 2013, two years were selected to calculate the efficiency in two different moments, one before and one after the parish reorganization. Thus, the evaluation period is defined as the year 2012, as it is the last full year before the reform, and the year 2015 after the reform. In this year, a new proposal for the aggregation of parishes is also presented and the respective analysis is carried out. The year 2014 was not chosen, because it is considered a year of adaptation/stabilization by the new executives.

Thus, the DMU consists of the parishes of the district of Braga. Concerning the model inputs, the number of persons in the executive body, given the human resources available to the municipalities, is an important aspect of their capacity and, consequently, of the governmental action they develop. According to Law no. 169/99, of 18 September, articles 23 and 24, the parish council is made up of a president and members, two of whom will exercise the functions, one as secretary and the other as treasurer.

Also, the reorganization of the parish territory, namely its reduction in number (through merger/union), has financial implications (Jorge et al., 2004; Afonso & Fernandes, 2005; Afonso & Venâncio, 2013; Gonzalez, 2017; Afonso & Venâncio, 2019), so the remuneration of local elected representatives is one of the impactful aspects (defined in the Table of Allowances for Local Elected Representatives).

The third input is the current expenditure (as defined by Decree-Law No. 192/2015, of 11 September). Expenses are one of the most used variables (Dollery & Woodbury, 2003; Skica, Lesniowska-Gontarz & Miszczyńska, 2019; Balaguer-Coll *et al.*, 2002; Sousa, Araújo & Tannuri-Pinto, 2012; Storto, 2013; Jorge *et al.*, 2004; Afonso & Fernandes, 2005; Afonso & Venâncio, 2013; Saraiva *et al.*, 2017; Gonzalez, 2017; Afonso & Venâncio, 2019). It should be



noted that some authors have used revenues as a variable (Galiniene & Dzemydaite, 2012; Sousa *et al.*, 2012; Galić & Šehić, 2014) but in different realities. This was not considered as an input, because the main source of revenues for the parishes (the Parish Financing Fund) did not change with the reform.

It should be noted that the financial data of the parishes is not available on their websites, having been collected from the Court of Auditors and the parishes themselves regarding the missing elements. It is also not harmonised, since most parishes are included in the simplified accounting regime, essentially providing data on a cash basis, while others report on an accrual basis (Resolution No. 50/2012, of 11 December and Resolution No. 44/2015, of 25 November).

Regarding the outputs, and based on the fact that the parishes are integrated into the autonomous administration, as territorial legal persons (articles 235 of the Constitution of the Portuguese Republic), their typology is considered relevant for this study. Thus, the parishes area is considered as an output, since their territorial delimitation has a direct influence on their annual accounts in terms of the remuneration of the local elected representatives. In addition, the number of inhabitants is also a condition for the definition of these values. This last variable is the most relevant since the parishes' objective is to satisfy the needs of the population. Therefore, both area and population are important variables for evaluating efficiency, especially when optimizing the efficiency of the public sector (Balaguer-Coll *et al.*, 2002; Jorge *et al.*, 2004; Storto, 2013; Hužvár, Rigova & Sykorova, 2016; Gonzalez, 2017; Skica *et al.*, 2019).

The parishes area was obtained from the Portuguese Geographical Institute, through the Official Administrative Charter of Portugal, and the number of inhabitants was collected from the 2011 Census.

Radial and non-radial models are used to calculate the efficiency indexes. The former are the most classic and, therefore, the most widely used (Dollery & Woodbury, 2003; Skica *et al.*, 2019; Balaguer-Coll *et al.*, 2002; Sousa *et al.*, 2012; Galić & Šehić, 2014; Storto, 2013; Afonso & Fernandes, 2005, Gonzalez, 2017, Afonso & Venâncio, 2019), while the latter foresee different situations, namely, by not ignoring the existence of a excessive number of inputs or deficit of outputs. Regarding radial models, the choice falls on the Charnes, Cooper, and Rhodes (CCR) model (Charnes, Cooper & Rhodes, 1978) over the Banker, Charnes, and Cooper (BCC) model (Banker, Charnes & Cooper, 1984), since the latter presupposes comparing DMU of similar size, i.e., comparing identical units with each other, and not with the entire sample as in the CCR model (Pimentel, 2015). As for the radial models, it is understood that the Slack Based Model (SBM) model by Tone (2001) is relevant in measuring the efficiency of the DMU in question, especially because it is a large number of parishes, with



different characteristics. Additionally, this model introduces a new form of orientation (non-oriented) as well as other types of scale returns.

DEA models can have constant returns of scale (RCE) or variable returns of scale (RVE). In practice, the first one predicts that an increase in inputs implies a proportional increase in the amount of outputs obtained, and the second considers that there is no proportional variation between the level of inputs and the level of outputs. In the case of parishes, it cannot be foreseen in advance that their merger will result in a proportional increase in expenses, even more so in such a wide universe, which supports the need to use both aspects. It should be noted that the use of different orientations results in different efficiency values, this variation is explained by the admission of variable returns of scale, because when the returns are variable, the parishes that operate with low values of inputs may have increasing returns of scale (an increase in inputs implies a more than proportional increase in the amount of outputs obtained), which can lead to them moving from an inefficient to an efficient situation.

As for the orientation of the models, efficiency can be achieved by minimizing inputs (input orientation), maximizing outputs (output orientation), or being oriented to both, in this case, called no orientation. In the sample under study, it is considered that an orientation to outputs (area, and number of inhabitants) does not apply, at least in isolation, since the RATF is not concerned only with its maximization. So, an orientation to inputs is followed, not only because of the growing concern with sustainability, but also because expense reduction is increasingly decisive in the pursuit of the objectives of municipalities. On the other hand, the perspective of non-orientation is also considered relevant, as it considers the minimization of inputs and the maximization of outputs, simultaneously. Thus, it can be seen whether reducing expenses and increasing the size of parishes causes efficiency indexes that are different from those of an orientation only to expenses (inputs).

After choosing the DEA models to be adopted, it is essential to identify the parishes that use the means at their disposal in a more rational way, that is, the optimal relationship between their resources (inputs) and their products/services (outputs) (Coelli, Rao, O'Donnell & Battese, 2005).

In this work, efficiency is, therefore, the optimal relationship between the number of people who make up the executive body, the remuneration of the local elected representatives, and the current expenditure, relating to the size of the parish (area and number of inhabitants). It should be noted, however, that when a parish is classified as inefficient, it only means that it has a lower performance when compared to the others, hence the advantage of this methodology by allowing to compare the units (parishes).



As mentioned, Braga is the Portuguese district with the largest number of parishes, it had 515 before the RATF and currently has 347, having been the district that lost the largest number with the reorganization of 2013, that is, 168. Table 1 shows the changes in the number of parishes in the 14 municipalities that make up the district of Braga in two moments, before and after the RATF. In addition, it is possible to observe the great disparity in the number of parishes by each municipality, where Barcelos is the municipality with the most parishes in the district (and even in Portugal) and Vizela is the one with the fewest (only 5).

Table 1

Number of parishes by municipality in the district of Braga

Municipalities	Number of parishes before the RATF	Number of parishes after the RATF	Number of extinct parishes	% of extinct parishes
Amares	24	16	8	33%
Barcelos	89	61	28	31%
Braga	62	37	25	40%
Cabeceiras de Basto	17	12	5	29%
Celorico de Basto	22	15	7	32%
Esposende	15	9	6	40%
Fafe	36	25	11	31%
Guimarães	69	48	21	30%
Póvoa de Lanhoso	29	22	7	24%
Terras de Bouro	17	14	3	18%
Vieira do Minho	21	16	5	24%
Vila Nova de Famalicão	49	34	15	31%
Vila Verde	58	33	25	43%
Vizela	7	5	2	29%
TOTAL	515	347	168	33%

Source: Own elaboration



4 RESULTS AND DISCUSSION

To understand whether the reform carried out was the most efficient, in addition to studying the efficiency of the parishes before and after the reform, a new reorganization of the parishes was also proposed (presented in Appendix A, together with the respective criteria).

Table 2 shows the average results, by municipality, of the parishes of the district of Braga, for the year 2012, according to the models adopted, i.e., through the CCR-I, SBM-I, non-oriented SBM Model, both taking into account constant scale returns, and the SBM-I Model and SBM not oriented according to variable scale returns. The approach was made municipality by municipality, to respect the identity of each one, since the urban and territorial level is very unequal.

Table 2

Average efficiency of parishes by municipality in the district of Braga - 2012

Municipalities	Constant returns to scale			Variable Returns to Scale	
	CCR Inputs	SBM Inputs	Non-oriented SBM	SBM Inputs	Non-oriented SBM
Amares	0.6191	0.5858	0.5109	0.8621	0.5757
Barcelos	0.6167	0.5449	0.5001	0.7977	0.576
Braga	0.5455	0.4753	0.3704	0.7953	0.4946
Cabeceiras de Basto	0.7002	0.5938	0.5327	0.8966	0.6541
Celorico de Basto	0.6164	0.5973	0.5427	0.9109	0.5986
Esposende	0.8304	0.8023	0.7731	0.9086	0.8417
Fafe	0.6258	0.5591	0.4708	0.9337	0.7371
Guimarães	0.6722	0.5924	0.5095	0.7542	0.5927
Póvoa de Lanhoso	0.6042	0.5414	0.4095	0.7918	0.5445
Terras de Bouro	0.6918	0.6196	0.456	0.9232	0.5659
Vieira do Minho	0.5997	0.4667	0.4183	0.7496	0.508
Vila Nova de Famalicão	0.6208	0.5405	0.4942	0.7749	0.5985
Vila Verde	0.4727	0.3959	0.3467	0.8318	0.4411
Vizela	0.6982	0.6285	0.5358	0.9561	0.79
Average	0.6367	0.5674	0.4908	0.8490	0.6085

The first year under analysis (2012) is the one in which the worst efficiency indices are observed in the light of the adopted criteria. Table 3 shows the average efficiencies for the year 2015 (i.e., after reform).



Table 3

The average efficiency of parishes by municipality in the district of Braga - 2015

Municipalities	Constant returns to scale			Variable Returns to Scale	
	CCR <i>Inputs</i>	SBM <i>Inputs</i>	Non- oriented SBM	SBM <i>Inputs</i>	Non- oriented SBM
Amares	0.7014	0.6816	0.6445	0.8824	0.6916
Barcelos	0.7137	0.6264	0.5942	0.81	0.6452
Braga	0.6424	0.5177	0.4521	0.7186	0.5587
Cabeceiras de Basto	0.7255	0.6203	0.5195	0.8591	0.7126
Celorico de Basto	0.8051	0.7481	0.7181	0.8978	0.7599
Esposende	0.9589	0.9293	0.8879	0.978	0.9446
Fafe	0.5752	0.5347	0.4746	0.8913	0.6394
Guimarães	0.761	0.7168	0.6816	0.8604	0.724
Póvoa de Lanhoso	0.727	0.6641	0.5918	0.7979	0.6359
Terras de Bouro	0.7777	0.7505	0.6083	0.9401	0.6807
Vieira do Minho	0.6338	0.5875	0.5649	0.8247	0.6411
Vila Nova de Famalicão	0.8073	0.6832	0.6478	0.8852	0.7584
Vila Verde	0.9148	0.7113	0.5872	0.8707	0.7187
Vizela	0.8823	0.8425	0.794	0.9874	0.9212
Average	0.7590	0.6867	0.6262	0.8717	0.7166

It can be seen that the reform carried out has boosted efficiency gains in several municipalities, namely in Vila Verde. However, there are situations in which this was not observed, such as in Fafe, in which the results show a decrease in all models adopted, except for the non-oriented SBM model, and in RCE, which shows an improvement, albeit small. Braga also showed a decrease in the average efficiency value calculated, between 2012 and 2015, in the SBM-I model for variable returns of scale. The same happens with Celorico de Basto and Cabeceiras de Basto, but in this last case, the decrease already occurs by the non-oriented SBM model, in RCE and by the SBM-I model in RVE.

Table 4 shows the average efficiencies related to the proposed reorganization.



Table 4

The average efficiency of the parishes by municipality in the district of Braga - Proposal

Municipalities	Constant returns to scale			Variable Returns to Scale	
	CCR Inputs	SBM Inputs	Non-oriented SBM	SBM Inputs	Non-oriented SBM
Amares	0.9923	0.9524	0.9384	0.9573	0.9384
Barcelos	0.778	0.7139	0.663	0.927	0.7792
Braga	0.803	0.7719	0.6348	0.9285	0.8284
Cabeceiras de Basto	0.9925	0.9494	0.9484	0.9494	0.9484
Celorico de Basto	0.9469	0.9238	0.901	0.947	0.9042
Esposende	0.9935	0.9888	0.9765	0.9922	0.9765
Fafe	0.8937	0.8806	0.7804	0.9676	0.9036
Guimarães	0.894	0.8527	0.7739	0.962	0.9123
Póvoa de Lanhoso	0.8575	0.8375	0.7174	0.9419	0.8022
Terras do Bouro	0.9678	0.941	0.9322	0.9954	0.9339
Vieira do Minho	0.8947	0.8236	0.7368	0.9346	0.874
Vila Nova de Famalicão	0.9163	0.8849	0.8238	0.9555	0.8442
Vila Verde	0.8181	0.7744	0.6921	0.8975	0.7486
Vizela	1	1	1	1	1
Average	0.9106	0.8782	0.8228	0.9540	0.8853

The average results show that the average efficiency was enhanced, except for Vila Verde (and only in the CCR-I model, the model in which there had been the highest increase from 2012 to 2015 in all the municipalities analysed). It should also be noted that with this aggregation proposal, parishes with the worst results in 2015 obtained a substantial increase in their efficiency index (such as Braga, Fafe, and Cabeceiras de Basto).

Table 5 shows the percentage of efficient parishes in each of the scenarios, to better understand their evolution.



Table 5

Evolution of the percentage of efficient parishes in the district of Braga

Municipalities	% of efficient parishes - 2012			% of efficient parishes - 2015			% of efficient parishes - Proposal		
		RC	RV		RC	RV		RC	RV
	E	E	E	E	E	E	E	E	E
Amar		21	29		31	38		67	67
es	%	%	%	%	%	%	%	%	%
Barcelos	10%	12%	16%	21%	9%	26%			
Braga	10%	16%	11%	22%	29%	43%			
Cabeceiras de Basto	29%	41%	33%	58%	60%	80%			
Celorico de Basto	23%	27%	33%	40%	50%	50%			
Esposende	40%	47%	67%	78%	80%	80%			
Fafe	19%	42%	20%	32%	45%	64%			
Guimarães	16%	22%	23%	31%	40%	60%			
Póvoa de Lanhoso	14%	21%	23%	27%	40%	40%			
Terras Bouro	24%	29%	36%	50%	80%	80%			
Vieira do Minho	19%	29%	31%	38%	33%	67%			
Vila Nova de Famalicão	10%	20%	21%	32%	43%	50%			
Vila Verde	9%	16%	15%	36%	33%	33%			
Vizela	14%	43%	60%	80%	100%	100%			
Average	18%	28%	30%	42%	52%	60%			

In general, the results highlight an increase in the average level of efficiency, from 2012 to 2015, as well as from 2012 to 2015.

It should also be noted that Esposende and Vizela were the municipalities with the best efficiency averages in 2012, being already at that time the ones with the fewest parishes. On the other hand, Braga and Vila Verde had the worst efficiency indexes, being municipalities with a large agglomeration of parishes. In 2015, these results were similar, except for Vila Verde, which, due to the cut of 25 of its parishes, saw its efficiency boosted, being one of the best results obtained. On the other hand, the proposal suggested by this study is the one that presents, in global terms, the highest percentage of efficient parishes (the only exception is Vila Verde in RVE). It should be noted that Vizela has the best result of the sample, with an index of 1.



5 CONCLUSION

The need to ensure the sustainability of public finances has gained new relevance, driven especially by the economic and financial crisis scenarios that have been witnessed in the world. In this context, one of the major trends that aim to enhance the efficiency of the use of resources comes from territorial reforms (Storto, 2013), in particular, the cases related to merger policies that have been implemented in many European countries (Hermenier, 2009).

In Portugal, as a result of the request for international financial assistance made in 2011, and to reduce expenditure, a reorganization of its parishes was implemented in 2013, which resulted in the extinction (by aggregation) of 29% of them.

The results obtained indicate that, on average, 18% of the parishes in the district of Braga reached the highest efficiency index in 2012 in RCE, and 28% in RVE. In 2015, this result rose to 30% in RCE and to 42% in RVE. Finally, in the proposal made, this figure would be between 52% and 60% for RCE and RVE, respectively.

Concerning territorial and population disparities, the results point in the same direction, that is, to a generalized increase in efficiency as moving towards a more accentuated aggregation, and with fewer disparities. Thus, both in terms of area and in terms of the number of inhabitants, the territorial reorganization carried out in 2013 and the one proposed by this research promoted reductions in asymmetries, especially the latter, which was more significant. Despite the above, the reduction of the asymmetries between these two components, at the same time, proved to be difficult, and in some cases even impossible, a situation that derives from certain constraints related to the parishes that can be aggregated, that is, either because they have too much area for too little population or the other way around. This topic is relevant in municipalities that have especially urban parishes, with a high number of inhabitants compared to the others, but also rural municipalities with high territorial areas, as are the cases of the more inland municipalities, represented here by Terras de Bouro, Cabeceiras de Basto or Celorico de Basto. However, the reduction of asymmetries can always be partial.

In general, the results obtained show that, in addition to promoting economies of scale, the suggested aggregation allows considerable efficiency gains and a more homogeneous organization. It should also be noted that this study did not intend to change the role of the parishes, as it did not intend to study whether the agglomeration of territorial units would trigger the loss of proximity to citizens. In addition, the approach used aims to contribute as research that is only based on the efficiency of municipalities to enhance the sustainability of public



administration, knowing in advance that this problem has obvious political implications for decision-makers.

In general, the proposed aggregation parameters aim to provide parishes with a larger scale, based on the growing practice of mergers in developed countries (Swianiewicz et al., 2010), with the premise that larger units are more efficient (Fox & Gurley, 2006; Hermenier, 2009; Bönisch et al., 2011; Tavares et al., 2012; Afonso & Venâncio, 2013), as well as overcoming any limitations resulting from the last reform.

Thus, it is considered that these aggregation parameters add value compared to the reform carried out in 2013, both from a perspective of reducing the asymmetries still in force and from a perspective of standardization among the EU Member States. Thus, it is considered relevant to seek to provide the parishes with a similar scale, a fundamental pillar in improving the management of the territory and the provision of public services to citizens (Documento Verde, 2011). The main objective is to have parishes with a closer scale, since these always have the same jurisdictions, inappropriate to the reality of many of them (Maranhão & Fernandes, 2016), which is an important aspect to provide an analogous response to the growing decentralization of competences (updated by Law No. 50/2018, of 16 August). It is also important to bring Portugal closer to the average number of local government units to that existing in the EU, bearing in mind that the premise of a new aggregation proposal has the efficiency of the public sector as its central point (Documento Verde, 2011; Resolution of the Council of Ministers No. 40/2011; Ziębicki, 2014).

The limitations of this study were essentially felt in the difficulty of collecting data related to the annual accounts of the parishes, which limits the variables studied and the object of study itself. Although it concerns only one district, it is considered that the theoretical framework of the model applied provides a structure that can be explored in other contexts.

The present study contributes to the knowledge of the efficiency of territorial reforms, namely in terms of the impact of size, being original in that it studies smaller units of local government, and the parishes, on which research is very incipient, namely in Portugal.

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Appendix A

This Appendix presents a proposal for the aggregation of parishes considering the following aspects:

1. Respect the aggregation parameters listed in article 6 of Law no. 22/2012, of 30 May:
2. The reduction of existing territorial asymmetries (area and number of inhabitants) should be promoted in at least one of the aspects (Documento Verde, 2011). To this end, the proposed aggregation should provide the parishes with a scale similar to the larger parish of each municipality (in hectares for data before RATF);
3. Do not create parishes with more than 50,000 inhabitants (article 8, paragraph c) of Law no. 22/2012, of 30 May), parishes with a municipal scale.
4. After aggregation, parishes should not have an area of less than 10 km², thus providing them with a geographical area closer to the European Union average (between 0.010 and 0.019 local units per km²).
5. The parishes should be aggregated within each municipality, based on their geographical proximity, as it would not make sense to unite parishes that are not adjoining.
6. The expenses with the executive staff of the parishes resulting from the aggregation to be considered are the minimum values defined by the Table of Allowances for Local Elected Representatives.
7. The value of current expenses to be considered in the proposal is the data from 2012, represented by the sum of each aggregated parish. The choice of the year derives from the fact that it is the last one that can obtain current expenses separately, that is, by parish.

Table I presents the new proposal for the aggregation of parishes for the district of Braga.



Table I.

Proposal for aggregation of parishes for the district of Braga

Municipalities	Description of the parishes before RATF	Area Ha	N.º Inhabitants 2011 (Grouped)	
Amares	Barreiros, Lago, Rendufe, Bico	1,233.28	4,571	
	Carrazedo, Prozelo, Besteiros, Ferreiros	1,004.53	5,305	
	Fiscal, Torre, Portela, Caldelas, Sequeiros	1,485.5	2,420	
	Caíres, Amares, Dornelas, Figueiredo	1,266.25	4,030	
	Paranhos, Paredes Secas, Vilela, Goães, Seramil	1,563.95	1,313	
	Bouro (Santa Maria), Bouro (Santa Marta)	1,641.9	1,250	
	Barcelos	Barqueiros, Cristelo, Paradela	2,413.97	4,682
Vila Seca, Fornelos, Gilmonde, Milhazes, Faria		2,152.31	4,978	
Courel, Vilar de Figos, Pedra Furada, Góios, Gueral		1,630.64	2,419	
Chavão, Negreiros, Macieira de Rates, Chorente		1,942.56	5,200	
Minhotães, Viatodos, Monte Fralães, Grimancelos		1,239.54	3,814	
Carvalhas, Silveiros, Rio Covo (Santa Eulália)		1,172.91	2,842	
Fonte Coberta, Moure, Carreira, Sequeade, Cambeses		1,347.48	5,053	
Encourados, Martim, Bastuço (S. João), Bastuço (Santo Estevão)		1,372.93	4,010	
Airó, Adães, Várzea, Midões, Gamil		1,450.13	4,993	
Alvelos, Carvalhal, Pereira, Remelhe		1,593.37	6,163	
Barcelinhos, Barcelos, Rio Covo (Santa Eugénia), Areias de Vilar		1,295.6	9,289	
Creixomil, Perelhal, Vila Cova		2,348.69	4,609	
Aldreu, Fragoso, Palme		2,569.95	4,170	
Tregosa, Durrães, Aguiar, Quintiães		1,409.31	2,599	
Carapeços, Campo, Tamel (S. Pedro Fins)		1,292.2	3,798	
Aborim, Cossourado, Balugães		1,534.85	2,557	
Alvito (S. Martinho), Couto, Alvito (S. Pedro), Panque		1,483.33	2,118	
Alheira, Igreja Nova, Oliveira, Roriz		2,216.28	4,612	
Silva, Lijó, Galegos (Santa Maria), Galegos (S. Martinho)		1,430.94	8,136	
Lama, Areias, Ucha, Pousa		1,667.96	5,977	
Arcozelo, Tamel (S. Veríssimo), Manhente	1,067.32	17,568		
Abade de Neiva, Vila Boa, Vila Frescaíinha (S. Martinho), Vila Frescaíinha (S. Pedro), Mariz	1,824.9	8,846		
Braga	Feitos, Vilar do Monte, Tamel (Santa Leocádia)	1,432.98	1,958	
	Cunha, Ruilhe, Arentim, Tebosa	1,051.02	3,801	
	Escudeiros, Guisande, Penso (S. Vicente), Oliveira (S. Pedro)	1,050.56	2,482	
	Esporões, Lamas, Trandeiras, Morreira, Penso (Santo Estevão)	1,277.75	4,433	
	Figueiredo, Celeirós, Vimieiro, Fradelos, Priscos	1,257.77	7,847	
	Aveleda, Sequeira, Vilaça, Tadim, Passos (S. Julião)	1,248.94	6,551	
	Arcos, Lomar, Nogueira, Fraião, Braga (S. José de S. Lázaro)	1,263.27	30,910	
	Mire de Tibães, Padim da Graça, Cabreiros	1,054.62	5,469	
	Merelim (S. Paio), Merelim (S. Pedro), Panóias, Parada de Tibães, Frossos, Dume	1,244.15	12,340	
	Palmeira, Adaúfe	1,968.47	9,179	
	Braga (S. Vitor), Gualtar, Tenões, Lamações, Nogueiró	1,319.7	43,057	
	Espinho, Este (S. Pedro), Este (S. Mamede)	1,427.07	5,018	
	Sobreposta, Pedralva	1,404.85	2,411	
	Navarra, Crespos, Pousada, Santa Lucrecia de Algeriz	1,355.57	2,341	
	Braga (Cividade), Braga (Sé), Braga (S. João do Souto), Braga (S. Vicente), Braga (Maximinos), Ferreiros, Gondizalves, Semelhe, Real	1,416.21	46,130	
	Cabeceiras de Basto	Faia, Basto, Alvite, Arco de Baúlhe, Vila Nune	2,736.68	4,507
		Gondiães, Vilar de Cunhas, Cavez	6,817.59	1,689



Municipalities	Description of the parishes before RATF	Area Ha	N.º Inhabitants 2011 (Grouped)
Celorico de Basto	Rio Douro, Pedraça	5,528.24	1,702
	Bucos, Cabeceiras de Basto	5,745.73	1,836
	Refojos de Basto, Painzela, Outeiro, Passos	3,353.92	6,976
	Agilde, Fervença, Moreira do Castelo	2,719.5	3,299
	Arnoia, Britelo, Codeçoso	3,721.01	4,707
	Rego, Borba da Montanha	2,797.81	2,535
	Basto (S. Clemente), Ribas	2,368.85	2,592
	Carvalho, Basto (Santa Tecla), Infesta, Ourilhe, Gémeos, Molaes, Caçarilhe	3,395.58	3,489
Esposende	Gagos, Corgo, Vale de Bouro, Canedo de Basto, Veade	3,104.27	3,476
	Apúlia, Fonte Boa, Rio Tinto	2,090.49	6,142
	Gemeses, Gandra, Fão, Esposende	1,821.43	9,099
	Marinhas, Palmeira de Faro, Curvos	2,147.02	9,407
	Antas, Forjães	1,737.2	4,988
Fafe	Vila Chã, Belinho, Mar	1,744.84	4,618
	Regadas, ardegão, arnozela, seidões	1,568.54	2,744
	Silvares (S. Martinho), Armil, Cepães, Fareja	1,833.07	4,325
	Arões (S. Romão), Arões (Santa Cristina), Golães	1,437.1	6,968
	Fornelos, Medelo, Vinhós, Revelhe, Travassós, Passos	2,499.09	7,082
	Queimadela, Monte	1,983.63	798
	Aboim, Gontim, Felgueiras	2,050.24	561
	Várzea Cova, Pedraído	1,709.13	623
	Estorãos, Ribeiros, Moreira do Rei	2,811.55	3,815
	S. Gens, Quinchães	2,540.57	3,981
	Antime, Fafe, Silvares (S. Clemente)	1,354.46	17,749
	Agrela, Serafão, Freitas, Vila Cova	2,120.72	1,987
	Gandarela, Guardizela, Conde, Moreira de Cónegos, Lordelo	1,731.44	14,066
	Selho (S. Cristovão), Selho (S. Jorge), Gondar, Serzedelo	1,551.3	13,522
Guimarães	Candoso (S. Martinho), Candoso (S. Tiago), Mascotelos, Polvoreira, Pinheiro, Urgezes	1,829.85	17,700
	Oliveira, Costa, Infantas, S. Sebastião	1,230.14	12,160
	Serzedo, Calvos, Gémeos, Tabuadelo, S. Faustino, Abação (S. Tomé)	1,628.66	7,531
	Ponte, Fermentões, Silvares, Creixomil, S. Paio	1,772.03	27,136
	Corvite, Pencelo, Azurém, MeS. Frio, Aldão, Selho S. Lourenço, Prazins (Santo Tirso)	1,756.74	18,730
	Atães, S. Torcato, Rendufe	2,247.43	6,003
	Longos, Balazar, Sande (S. Lourenço)	1,369.39	2,909
	Sande (S. Martinho), Sande (S. Clemente), Sande (Vila Nova), Caldelas	1,325.1	11,690
	Briteiros (Santa Leocádia), Briteiros (Salvador), Donim, Briteiros (Santo Estevão), Barco, Prazins (Santa Eufémia)	2,057.79	6,655
	Souto (Santa Maria), Souto (S. Salvador), Gondomar	1,602.23	2,607
	Airão (Santa Maria), Airão (S. João Batista), Oleiros, Figueiredo, Leitões	1,413.92	3,979
	Ronfe, Vermil, Brito	1,324.46	10,545
	Arosa, Gonça, Castelões	1,254.91	1,860
	Galegos, Louredo, Campos, Santo Emilião	1,014.43	2,918
	Póvoa de Lanhoso	Taide, Vilela, Garfe	1,667.96
Povoa de Lanhoso (Nª Senhora do Amparo), Fonte Arcada		1,176.6	6,325
Travassos, Brunhais, Oliveira		1,307.08	1,406
Sobradelo da Goma, Esperança		1,489.23	1,133
Serzedelo, Frades		1,446.82	993
Rendufinho, Calvos, Geraz do Minho		1,752	1,740
Friande, S. João de Rei		1,046.73	642



Municipalities	Description of the parishes before RATF	Area Ha	N.º Inhabitants 2011 (Grouped)
	Covelas, Ferreiros, Lanhoso	1,336.74	1,574
	Águas Santas, Moure, Monsul, Verim, Ajude	1,227.69	1,927
Terras de Bouro	Campo do Gerês	6,876.48	162
	Vilar da Veiga	7,782.57	1,286
	Brufe, Cibões, Carvalheira, Chamoim	4,107.68	1,098
	Covide, Monte, Rio Caldo, Valdosende	5,613.18	1,991
	Balança, Ribeira, Souto, Moimenta, Vilar, Chorense, Gondoriz	3,366.47	2,716
Vieira do Minho	Parada do Bouro, Caniçada, Soengas, Tabuaças, Soutelo, Anissó	3,453.44	2,379
	Cova, Louredo, Salamonde, Ventosa, Eira Vedra	3,027.41	2,184
	Cantelães, Pinheiro, Vilar do Chão	2,973.86	1,531
	Ruivães, Campos	4,403.46	923
	Anjos, Rossas	4,862.39	2,006
	Guilhofrei, Mosteiro, Vieira do Minho	2,923.81	3,974
V. N. Famalicão	Fradelos	1,680.34	3,914
	Ribeirão	1,029.09	8,828
	Calendário, Vilarinho das Cambas	1,514.74	13,033
	Cavalões, Gondifelos, Outiz	1,670.56	4,890
	Brufe, Vila Nova de Famalicão, Gavião, Antas	1,324.07	21,818
	Louro, Mouquim, Cruz	1,301.07	5,254
	Nine, Lemenhe, Jesufrei, Arnoso (Santa Maria), Arnoso (Santa Eulália)	1,692.77	7,971
	Sezures, Vale (S. Cosme), Telhado, Portela	1,583.87	5,898
	Vale (S. Martinho), Vermoim, Requião	1,573.2	8,387
	Joane, Pousada de Saramagos, Mogege, Castelões	1,583.27	14,287
	Pedome, Oliveira (Santa Maria), Oliveira (S. Mateus), Riba de Ave	1,207.93	11,679
	Ruivães, Novais, Bente, Delães, Carreira, Bairro	1,394.35	13,103
	Abade de Vermoim, Lagoa, Avidos, Landim, Seide (S. Miguel), Seide (S. Paio)	1,296.84	7,466
	Cabeçudos, Esmeriz, Lousado	1,307.18	7,741
Vila Verde	Cervães, Cabanelas	1,763.08	4,083
	Escariz (S. Mamede), Escariz (S. Martinho), Freiriz, Parada de Gatim	1,483.69	2,641
	Arcozelo, Marrancos, Portela das Cabras, Goães	1,203.54	1,733
	Nevogilde, Carreiras (Santiago), Carreiras (S. Mamede), Moure, Atiães	1,501.68	3,195
	Lage, Oleiros, Vila de Prado, Soutelo	1,813.33	10,638
	Sabariz, Vila Verde, Barbudo, Turiz, Loureira	1,497.35	10,388
	Dossãos, Mós, Gondíães, Geme, Travassós, Esqueiros	1,444.4	2,432
	Duas Igrejas, Azões, Rio Mau	1,938.21	2,272
	Pedregais, Godinhaços, Codeceda	1,220.84	883
	Atães, Vilarinho, Pico, Pico de Regalados, Prado (S. Miguel)	1,513.47	3,241
	Sande, Ponte, Coucieiro, Lanhas	1,344.38	2,186
	Gomide, Passó, Valbom (S. Pedro), Oriz (Santa Marinha), Oriz (S. Miguel)	1,381.06	1,256
	Valbom (S. Martinho), Valdreu	1,965.98	833
	Aboim da Nóbrega, Gondomar	1,441.17	1,058
Barros, Penascais, Covas, Valões	1,354.33	1,181	
Vizela	Infias, Caldas de Vizela (S. Miguel), Caldas de Vizela (S. João)	1,079.72	12,473
	Tagilde, Vizela (S. Paio), Vizela (Santo Adrião), Santa Eulália	1,390.1	11,263

Source: Own elaboration



With the suggested proposal, the total number of parishes for the district of Braga becomes 137, which represents about 27% of the parishes existing before the RATF (515), and 39% of the current parishes (347), a fact that to be adopted throughout the territory Portuguese places it within the average of local government units verified in the EU. Specifically, the current panorama of the parishes of the district in question is represented by 150 parishes with less than 500 Ha and 2 above 5,000 Ha, with the proposal there are no longer parishes with less than 500 Ha, remaining the same the parishes of Campo do Gerês and Vilar da Veiga, both in Terras de Bouro, as the largest. From another perspective, of the current 22 parishes with less than 500 inhabitants, there is now only one (Campo do Gerês), and this case remained unchanged because, in case of aggregation, the area of the parish would be further enhanced, which notes the difficulty of proposing an aggregation that reduces the asymmetries area and inhabitants, simultaneously. In addition, this aggregation proposal sought not to create parishes with more than 50,000 inhabitants, with only 5 cases with more than 20,000 inhabitants.