"Fiscal attractiveness of Portuguese municipalities"

| AUTHORS | Ricardo de Moraes e Soares (iD)
 Pedro Pinheiro (iD) |

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Ricardo de Moraes e Soares, Ph.D. in Public Administration, Professor, Lisbon Accounting and Business School, Finance Department, Polytechnic Institute of Lisbon, Portugal. (Corresponding author)

Pedro Pinheiro, Ph.D. in Management, Professor, Lisbon Accounting and Business School, Accounting Department, Polytechnic Institute of Lisbon, Portugal.

Ricardo de Moraes e Soares (Portugal), Pedro Pinheiro (Portugal)

FISCAL ATTRACTIVENESS OF PORTUGUESE MUNICIPALITIES

Abstract

The modeling of the municipalities' tax burden is one of the most relevant issues, especially in terms of municipal competitiveness. It challenges the definition and delimitation of local authorities' taxing powers. This study aims to analyze the level of taxation of Portuguese municipalities and how local policies contribute to the definition of a ranking of fiscally more competitive municipalities. The paper applies quantitative methods based on the fiscal information made available by municipalities. It has been determined that it is possible to classify municipalities as more or less competitive through their tax supply, mainly at the level of their ability to set tax rates. In 2021, compared to 2020, the most fiscally competitive municipalities were located in the Autonomous Region of the Azores (Corvo (95.128%); Vila do Pico (95.128%); Madalena (95.128%); Povoação (95.078%); Santa Cruz das Flores (95.072%); Angra do Heroísmo (95.044%); Nordeste (95.036%); Vila Franca do Campo (95.036%); Horta (95.017%); and Ponta Delgada (95.017%)). The study also verified the maintenance of fiscal competitiveness among the most fiscally attractive municipalities, despite having several types of fiscal attraction policy options at their disposal, always conditioned by national legislation. This means fiscal policy is an instrument of competition for attracting companies, people, and productive investment to local municipalities. The existence of an international dogma favorable to the increasing attribution of administrative and financial autonomy to local authorities mainly supports this phenomenon.

Keywords	attractiveness, autonomy, competitiveness, municipality, policy, tax
JEL Classification	H30, H71, H77, K34

INTRODUCTION

Tax attractiveness is one of the most important elements in determining the level of competitiveness among municipalities. The importance of municipalities attracting and retaining firms, individuals, and productive investments through favorable tax policies is currently recognized. As such, the assessment of the tax attractiveness of municipalities should deserve increasing attention from policymakers, researchers, and society. In Portugal, the assessment of the fiscal attractiveness of municipalities is particularly relevant. Understanding the factors contributing to municipalities' fiscal attractiveness can help policymakers define effective strategies to attract investment, foster entrepreneurship, and increase local competitiveness.

This study seeks to deepen the measurement of the tax attractiveness of Portuguese municipalities and to provide information on the level of tax supply by ranking tax competitiveness across municipalities. The formulation of the problem stems from identifying the main elements that contribute to the tax attractiveness of Portuguese municipalities. That is, it involves the analysis of factors such as taxes, fees, incentives, and exemptions. Therefore, defining a reliable indicator in measuring fiscal attractiveness is necessary. That is, it should capture the dimensions that influence the fiscal attractiveness of municipalities.

1. LITERATURE REVIEW

Municipal fiscal attractiveness is one of the most important topics for the study of public finance (Rosen, 2007), and the definition is deeply related to several elements. The first derives from the use, by local governments, of fiscal policies as a tool to attract businesses (Sieg, 2020), people (Sandoz, 2019), and productive investments (Tanzi, 1992) in order to stimulate the development of territories. To this end, it is necessary to understand what factors make a given municipality more attractive in fiscal terms to develop effective strategies. Secondly, municipalities compete with each other to attract companies, people, and investments (Sgambati et al., 2022). Thus, tax attractiveness plays a decisive role in the competitiveness of municipalities, i.e., municipalities with more attractive tax policies are more likely to attract new agents and resources. Third, municipal taxes are the primary source of revenue for municipalities (Gannon, 1921). The study of tax attractiveness allows municipalities to optimize tax policies in order to improve the management of revenue sources and maintain levels of competitiveness, economic growth, and tax attractiveness (Hendrick, 2011). Fourth, the financial health of municipalities is essential for maintaining public services (Freire & Sinet, 2014) and influences the ability of municipalities to produce revenues.

On the other hand, it also helps local governments decide which fiscal policies to adopt. Fifth, tax attractiveness contributes to identifying municipalities with more favorable tax frameworks and with higher levels of attraction of companies, people, and investments, promoting further growth and local development (Hesse, 2021). This means that tax policies have a direct impact on the lives of municipalities (Vélez-Hagan, 2019), and the study of the local tax level allows obtaining information about the preferences and needs of local agents and thus helping policymakers to produce tax policies that are aligned with the interests and objectives of residents.

For Edwards and Mitchell (2008), fiscal attractiveness is not only an international issue (between countries) but also a national reality in which municipalities exhibit an attractive fiscal offer (lower rates and taxes) and seek among themselves to

be more fiscally competitive. Keller and Schanz (2013) argue that municipalities freely compete among themselves to attract companies, people, and investments to their territories, and the situation results from the fact that, at the international level, harmonized fiscal rules on local taxation frameworks have not yet been defined.

For Giambiagi and Além (2001), fiscal attractiveness is the best instrument to fight the depopulation of territories. However, they also consider that global international tax harmonization is necessary. Catarino (2020) refers that one of the consequences of municipal tax attractiveness is the worsening of harmful tax competition. The study mentions that the European Union's experience demonstrates how difficult it is to obtain an acceptable level of tax competition: a good set of general rules that reduce or eliminate harmful tax competition.

For Devereux (2006), tax attractiveness stems from the absence of an international tax law that establishes common rules and corresponds to a set of factors and tax conditions offered by municipalities to captivate and influence the agents' decisions on the possible location of economic operations. However, there is no evidence of the veracity of this position (Bahl, 1981).

The first authors to talk about fiscal attractiveness among the various levels of governance were Musgrave (1971) and Oates (1999). They used the term "fiscal federalism" to define, in part, the competition among bodies of the same state. In the same sense, Tiebout (1956), through the theory of tax competition, defines local tax attractiveness as the capacity for geographical mobility of companies and citizens between jurisdictions of the same level. Currently, this capacity has expanded and accentuated the phenomenon of tax competition between regions and territories of the same state.

Overesch and Wamser (2010) mention that the level of taxation is one of the most relevant elements in the decision on the location of corporate headquarters. While Bauer (2020) alludes that due to high local tax competition (between levels of governance), political actors feel the need to change tax policies to ensure they are more attractive for

investment. Larin et al. (2013) do not consider the tax element as the only deciding factor. However, they argue that taxation has a relevant weight in agents' decisions and in the choice of territorial areas where companies can establish themselves with significant tax advantages.

The OECD (2015) defines municipal tax attractiveness as a strategic interaction of tax policy between the different levels of local governance to attract and retain companies, people, and investment, and depends on the willingness and ability of economic agents to relocate economic activity and the tax base according to the most attractive tax offer defined by municipalities. However, Jones and Temouri (2016) allude that local tax attractiveness tends to vary over time and is shaped depending on the tax competencies of municipalities. For Liu et al. (2020), tax attractiveness depends on the structure of the national tax system and the willingness of local decision-makers to adopt more attractive tax solutions.

However, opinions are mixed on the benefits and costs arising from tax attractiveness. For Cibils and Ter-Minassian (2015), tax attractiveness brings local tax policies closer to citizens' and businesses' preferences. Jametti (2014) and Blöchliger (2015) argue it incites greater public sector efficiency. In comparison, Blöchliger and Pinero-Campos (2011) mention that it prevents excessive tax expenditures. Others argue that local tax attractiveness causes a distorted tax structure (Kangasharju et al., 2006), an increase in local tax disparities (Rusk, 1999) and may give rise to inadequate provision of municipal public services.

Coimbra et al. (2011), studying tax attractiveness among Portuguese municipalities, conclude that the level of taxes required locally varies according to local tax policy, with a clear impact on the attractiveness of companies, people, and productive investment. This puts municipalities in direct competition. Suppose it is true that each municipality has, and should have, its own development strategy based on assumptions that embody very different development plans. In that case, it is also true that they all have the desire to increase their relative development in common; to do so, they depend on internal and external private investment (Plummer, 2002).

For Larin et al. (2013), municipal tax attractiveness should be seen as an element of deepening interregional economic development, although Santos and Palma (2006) argue that other factors affect the decision of mobility of tax bases between territories.

Blöchliger and Pinero-Campos (2011) define tax attractiveness as tax competition between regions of the same state, and it concerns the improvement of the supply of all taxes, regardless of the levels of public administration. For Halleux et al. (2022), local municipalities have broad powers of taxation and can improve or worsen the fiscal framework of specific fees applied by public services.

In Portugal, municipalities can define, according to their competencies, the tax rates to be applied and collected in their territorial areas. According to the OECD (2008), they should promote local and regional development and competitiveness. This fact attests to the pertinence of the present analysis.

Therefore, this paper aims to present a possible formula for measuring the local tax offer and defining a ranking, so that economic decision-makers can evaluate and compare different municipalities. Ultimately, it should provide decision-makers with the knowledge to guide decision-making based on fiscal criteria.

2. METHODS

The analysis focuses on a research design of the case study type. Municipal and national fiscal data were applied for three years, corresponding to the period from 2017 to 2021. The indicator developed allows to order, in an increasing manner, in percentage terms, between 0.0% and 100.0%, the municipalities that have the best local tax regime, that is, the best tax attractiveness ratio, allowing economic agents to choose the one that proves to be the most attractive to locate their productive investments. Concerning the reading of the index results, the closer to 100.0%, the higher the level of tax attractiveness of the municipality.

Considering the local tax policy options of each of the municipalities and the national tax policy options developed within the governments' tax

competencies, the attractiveness levels of the municipalities were estimated. This estimate was, for each municipality and year considered, obtained through the following expression:

$Municipal\,Tax\,Attractiveness\,Index\,(IMAF) =$ (1)

$$= 1 - \left[\frac{\sum_{i=1}^{n} x_i}{n} \right],$$

or, in simplified form:

$Municipal\,Tax\,Attractiveness\,Index =$ (2)

$$= 1 - \left[\frac{x_1 + x_2 + x_3 + x_4 + x_5 + x_6 + x_7 + x_8 + x_9}{n} \right],$$

where "x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8, x_9" correspond to the various local and national taxes, and "n" to the total number of taxes. Thus, each of the terms in the expression translates to the following taxes: x_1 = IMI or Municipal Property Tax; x_2 = IRS or Personal Income Tax; x_3 = Municipal surcharge; x_4 = Municipal taxes per capita; x_5 = IRC or Corporate Income Tax; x_6 = State Surtax; x_7 = PAC or Additional Payment on Account; x_8 = DLRR or Deduction for Retained and Reinvested Profits; x_9 = Value-added tax; n = Total number of tributes.

This paper pretends to contribute to the academic debate on local tax competition and attractiveness by performing a set of statistical analyses and tests on the estimated levels of tax attractiveness of Portuguese municipalities and to identify the municipalities with the best tax regime (the best tax attractiveness ratio).

3. RESULTS

Taking into account the data regarding fiscal options (local and national) and the methodology adopted, it was possible to evaluate the estimated levels of fiscal attractiveness of each Portuguese municipality and to define the relative position of each municipality in relation to the others between the years 2017 and 2021.

The results obtained through the proposed methodology, presented in Table 1 and Figure 1, suggest that Portuguese municipalities' fiscal attractiveness levels are variable.

For the year 2017, the most fiscally competitive municipalities are Lajes do Pico (95.950%), Corvo (95.950%), Madalena (95.950%), Calheta-São Jorge (95.950%), São Roque do Pico (95.950%), Povoação (95.886%), Lajes das Flores (95.879%), Ribeira Grande (95.879%), Santa Cruz das Flores (95.789%), and Vila da Praia da Vitória (95.843%). On the other hand, the results suggest that the fiscally less competitive municipalities are Mealhada (94.657%), Lisboa (94.657%), Óbitos (94.653%), Valença (94.621%), Idanha-a-Nova (94.586%), Ribeira de Pena (94.586%), Ponte de Lima (94.584%), Caminha (94.583%), Águeda (94.479%), and Albufeira (94.479%).

For the year 2018, data suggest that the most fiscally attractive municipalities are Corvo (95.950%), Madalena (95.950%), São Roque do Pico (95.950%), Lagoa-São Miguel (95.946%), Lajes do Pico (95.943%), Povoação (95.886%), Lajes das Flores (95.879%), Santa Cruz das Flores (95.879%), Vila da Praia da Vitória (95.843%) and Angra do Heroísmo (95.843%). Conversely, the results show that the fiscally least attractive municipalities are Águeda (94.479%), Caminha (94.575%), Ponte de Lima (94.584%), Albufeira (94.586%), Ribeira de Pena (94.586%), Carrazeda de Ansiães (94.586%), Loulé (94.586%), Valença (94.621%), Óbitos (94.653%), and Lisboa (94.657%).

Taking into consideration the 2019 fiscal options, the data point to the most fiscally attractive municipalities: Corvo (95.950%), Madalena (95.950%), Lajes do Pico (95.950%), São Roque do Pico (%95.950), Povoação (95.886%), Lajes das Flores (95.879%), Santa Cruz das Flores (95.879%), Vila da Praia da Vitória (95.843%), Angra do Heroísmo (95.843%), and Ponta Delgada (95.843%). From a tax perspective, the least attractive municipalities are Águeda (94.479%), Ponte de Lima (94.584%), Albufeira (94.586%), Carrazeda de Ansiães (94.586%), Loulé (94.586%), Valença (94.643%), Óbitos (94.653%), Lisboa (94.657%), Mealhada (94.657%), and Ovar (94.688%).

Concerning 2020, the results show that the most fiscally attractive municipalities are Corvo (95.128%), Vila do Porto (95.128%), Madalena (95.128%), Lajes do Pico (95.128%), Povoação (95.078%), Santa Cruz das Flores (95.072%), Angra do Heroísmo (95.044%), Ponta Delgada

(95.044%), Nordeste (95.036%), and Vila Franca do Campo (95.036%). In contrast, for the year under review, the least attractive municipalities are Olhão (93.451%), São Brás de Alportel (93.449%), Espinho (93.378%), São João da Madeira (93.372%), Vagos (93.372%), Águeda (93.372%), Coimbra (93.372%), Vila do Conde (93.371%), Viana do Castelo (93.369%), and Moita (93.368%).

Concerning 2021, the following municipalities were found to have the best tax offer: Corvo (95.128%), Vila do Porto (95.128%), Madalena (95.128%), Povoação (95.078%), Santa Cruz das Flores (95.072%), Angra do Heroísmo (95.044%), Nordeste (95.036%), Vila Franca do Campo (95.036%), Horta (95.017%), and Ponta Delgada (95.017%). Conversely, the municipalities with the least fiscal attractiveness are São João da Madeira (93.397%), Espinho (93.378%), Vila do Conde (93.372%), Valença (93.372%), Vagos (93.372%), Águeda (93.372%), Ponte de Lima (93.371%), Estarreja (93.369%), Viana do Castelo (93.369%), and Moita (93.368%).

The results suggest that fiscal attractiveness among municipalities in 2017 varied between 94.479% and 95.950%. In 2018, this variation occurred between 94.657% and 95.950%, while in 2019, it varied between 94.688% and 95.950%. In 2020, in fiscal terms, the attractiveness of municipalities ranged between 93.368% and 95.128%, and in 2021, the results suggest a barrier between 93.368% and 95.128%.

Administrative districts reflect a group of regional divisions of the Portuguese territory and encompass several municipalities. The ordering of more or less attractive is thus dependent on the level of fiscal rivalry between municipalities of the same territorial unit. On the other hand, and no less important, the degree of tax attractiveness at the local governance level depends on the willingness and ability of subjects to relocate to other municipalities depending on the tax offer.

Table 2 displays the results, by districts and autonomous regions, of the most and least fiscally attractive municipalities for 2017–2021. Through this, it is possible to observe which municipalities grant a better fiscal offer.

The results suggest, for 2021, that the municipalities with the best tax offers are Sever do Vouga (94.490%) in Aveiro; Barrancos (94.667%) in Beja; Póvoa de Lanhoso (94.650%) in Braga; Vimioso (94.650%) in Bragança; Castelo Branco (94.650%) in Castelo Branco; Pampilhosa da Serra (94.650%) in Coimbra; Viana do Alentejo (94.650%) in Évora; Monchique (94.511%) in Faro; Mêda (4.650%) in Guarda; Figueiró dos Vinhos (94.594%) in Leiria; Cadaval (93.674%) in Lisboa; Crato (94.650%) in Portalegre; Baião (94.650%) in Porto; Sardoal (94.565%) in Santarém; Grândola (94.570%) in Setúbal; Melgaço (94.649%) in Viana do Castelo; Mondim de Basto (94.650%) in Vila Real; and Sernancelhe (94.650%) in Viseu. In the autonomous regions, the municipalities that exhibit a better tax supply are Ribeira Brava (94.239%) in Madeira, and Corvo (95.128%) in the Azores.

The fiscally least attractive municipalities, in 2021, are Estarreja (93.369%) in Aveiro; Mértola (94.368%) in Beja; Vizela (93.590%) in Braga; Carrazeda de Ansiães (93.456%) in Bragança; Proença-a-Nova (93.594%) in Castelo Branco; Figueira da Foz (93.561%) in Coimbra; Montemor-o-Novo (93.678%) in Évora; São Brás de Alportel (93.449%) in Faro; Figueira de Castelo Rodrigo (94.289%) in Guarda; Óbidos (93.508%) in Leiria; Lisboa (93.511%) in Lisboa; Avis (94.317%), in Portalegre; Vila do Conde (93.372%) in Porto; Cartaxo (93.647%) in Santarém; Moita (93.368%) in Setúbal; Viana do Castelo (93.369%) in Viana do Castelo; Ribeira de Pena (93.733%) in Vila Real; and Lamego (93.591%) in Viseu. In the autonomous regions, according to the results, the least fiscally attractive municipalities are Funchal (93.933%) in Madeira and Praia da Vitória (94.767%) in the Azores.

According to the methodology adopted, in relation to 2020 (Figure 2), the results suggest that the most fiscally attractive municipalities are Sever do Vouga (94.546%) in Aveiro; Barrancos (94.650%) in Beja; Póvoa de Lanhoso (94.649%) in Braga; Vimioso (94.650%) in Bragança; Castelo Branco (94.650%) in Coimbra; Pampilhosa da Serra (94.650%) in Coimbra; Viana do Alentejo (94.650%) in Évora; Monchique (94.511%), in Faro; Mêda (94.650%) in Guarda; Alvaiázere (94.650%) in Leiria; Cadaval (93.676%) in Lisbon; Crato (94.650%) in Portalegre; Baião (94.650%) in Oporto; Chamusca (94.597%)

Table 1. The 10 more and less fiscally attractive municipalities (2021–2017)

Ranking	Municipalities	2021 Results	Municipalities	2020 Results	Municipalities	2019 Results	Municipalities	2018 Results	Municipalities	2017 Results
1	Corvo	95.1278%	Corvo	95.1278%	Corvo	95.1278%	Corvo	95.9500%	Lajes do Pico	95.9500%
2	Vila do Porto	95.1278%	Vila do Porto	95.1278%	Vila do Porto	95.1278%	Madalena	95.9500%	Corvo	95.9500%
3	Madalena	95.1278%	Madalena	95.1278%	Madalena	95.1278%	São Roque do Pico	95.9500%	Madalena	95.9500%
4	Povoação	95.0778%	Lajes do Pico	95.1278%	Lajes do Pico	95.1278%	Lagoa (São Miguel)	95.9457%	Calheta (São Jorge)	95.9500%
5	Santa Cruz das Flores	95.0722%	Povoação	95.0778%	São Roque do Pico	95.1278%	Lajes do Pico	95.9429%	São Roque do Pico	95.9500%
6	Angra do Heroísmo	95.0444%	Santa Cruz das Flores	95.0722%	Povoação	95.0778%	Povoação	95.8857%	Povoação	95.8857%
7	Nordeste	95.0361%	Angra do Heroísmo	95.0444%	Lajes das Flores	95.0722%	Lajes das Flores	95.8786%	Lajes das Flores	95.8786%
8	Vila Franca do Campo	95.0361%	Ponta Delgada	95.0444%	Santa Cruz das Flores	95.0722%	Santa Cruz das Flores	95.8786%	Ribeira Grande	95.8786%
9	Horta	95.0167%	Nordeste	95.0361%	Praia da Vitória	95.0444%	Praia da Vitória	95.8429%	Santa Cruz das Flores	95.8786%
10	Ponta Delgada	95.0167%	Vila Franca do Campo	95.0361%	Angra do Heroísmo	95.0444%	Angra do Heroísmo	95.8429%	Praia da Vitória	95.8429%
299	São João da Madeira	93.3917%	Olhão	93.4511%	Ovar	93.5350%	Lisboa	94.6571%	Mealhada	94.6571%
300	Espinho	93.3783%	São Brás de Alportel	93.4494%	Mealhada	93.5111%	Óbidos	94.6529%	Lisboa	94.6571%
301	Vila do Conde	93.3722%	Espinho	93.3778%	Lisboa	93.5111%	Valença	94.6214%	Óbidos	94.6529%
302	Valença	93.3722%	São João da Madeira	93.3722%	Óbidos	93.5078%	Loulé	94.5857%	Valença	94.6214%
303	Vagos	93.3722%	Vagos	93.3722%	Valença	93.5000%	Carrazeda de Ansiães	94.5857%	Idanha-a-Nova	94.5857%
304	Águeda	93.3722%	Águeda	93.3722%	Loulé	93.4556%	Ribeira de Pena	94.5857%	Ribeira de Pena	94.5857%
305	Ponte de Lima	93.3711%	Coimbra	93.3722%	Carrazeda de Ansiães	93.4556%	Albufeira	94.5857%	Ponte de Lima	94.5843%
306	Estarreja	93.3694%	Vila do Conde	93.3711%	Albufeira	93.4556%	Ponte de Lima	94.5843%	Caminha	94.5829%
307	Viana do Castelo	93.3689%	Viana do Castelo	93.3689%	Ponte de Lima	93.4544%	Caminha	94.5750%	Águeda	94.4786%
308	Moita	93.3683%	Moita	93.3683%	Águeda	93.3722%	Águeda	94.4786%	Albufeira	94.4786%

Fiscally more attractive

Fiscally less attractive
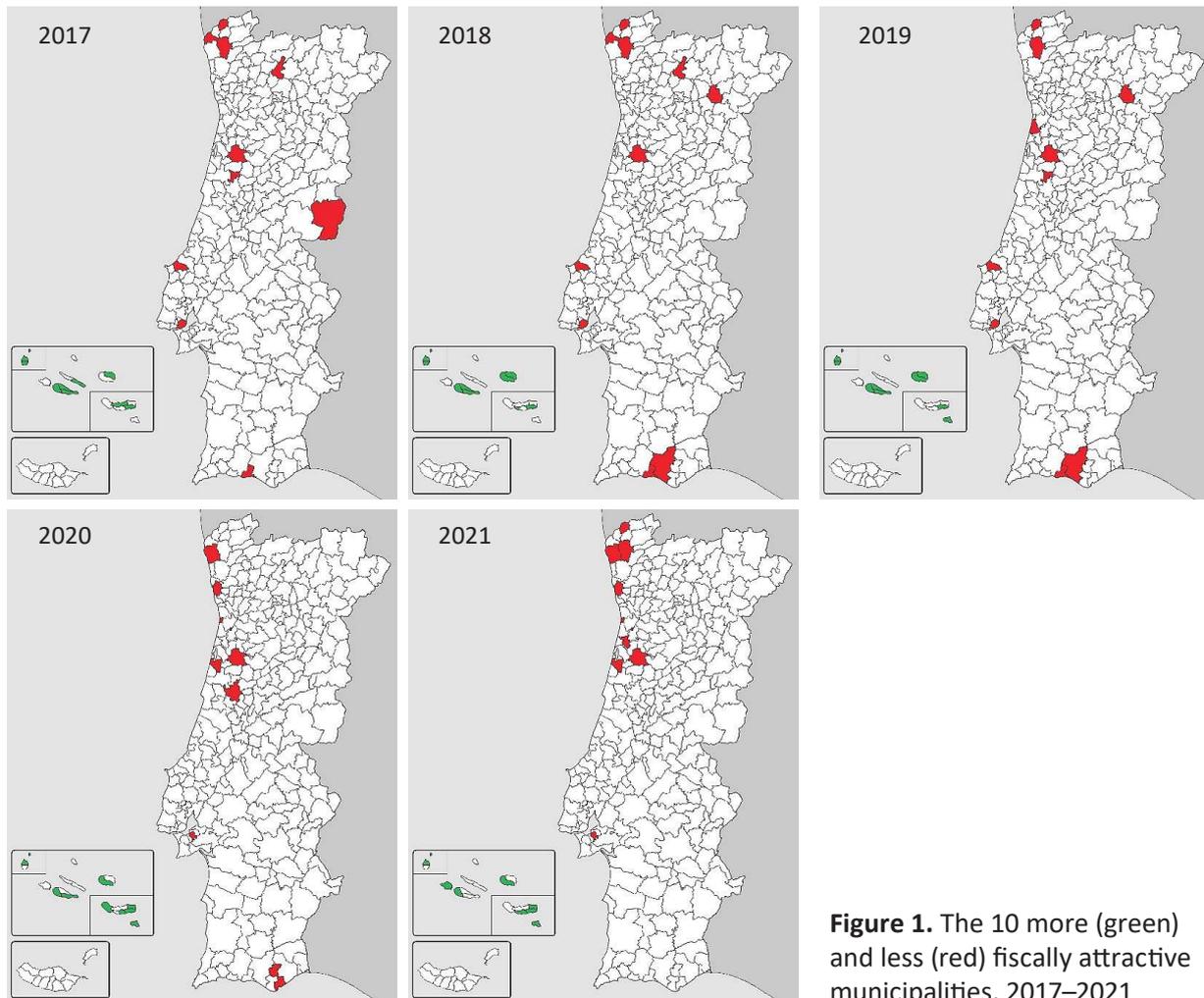
Figure 1. The 10 more (green) and less (red) fiscally attractive municipalities, 2017–2021

in Santarem; Grândola (94.569%) in Setúbal; Melgaço (94.649%), in Viana do Castelo; Mondim de Basto (94.650%) in Vila Real; and Sernancelhe (94.650%) in Viseu. In the autonomous regions of Madeira and the Azores, the municipalities of Ribeira Brava (94.239%) and Corvo (95.128%), respectively, were verified.

Inversely, in 2020 (Figure 2), the results indicate these fiscally attractive municipalities: Águeda (93.372%) in Aveiro; Ferreira do Alentejo (94.285%) in Beja; Braga (93.592%) in Braga; Carrazeda de Ansiães (93.456%), in Bragança; Idanha-a-Nova (93.594%) in Castelo Branco; Coimbra (93.372%) in Coimbra; Montemor-o-Novo (93.650%) in Évora; São Brás de Alportel (93.449%) in Faro; Figueira de Castelo Rodrigo (94.289%) in Guarda; Óbidos (93.508%) in Leiria; Lisboa (93.511%) in Lisboa; Alter do Chão (94.289%) in Portalegre; Vila do Conde (93.371%) in Porto; Cartaxo (93.642%) in Santarém; Moita (93.368%) in Setúbal; Viana do

Castelo (93.369%) in Viana do Castelo; Ribeira de Pena (93.733%) in Vila Real; and Viseu (93.594%) in Viseu. The less fiscally attractive municipalities in the autonomous regions are Porto Moniz (93.961%) in Madeira and Praia da Vitória (94.767%) in the Azores.

For 2019 (Figure 3), the results suggest that the most fiscally attractive municipalities are Arouca (94.594%) in Aveiro; Barrancos (94.650%) in Beja; Póvoa de Lanhoso (94.648%) in Braga; Vimioso (94.650%) in Bragança; Castelo Branco (94.650%) in Castelo Branco; Pampilhosa da Serra (94.650%) in Coimbra; Viana do Alentejo (94.594%) in Évora; Vila do Bispo (94.592%) in Faro; Vila Nova de Foz Côa (94.650%) in Guarda Alvaiázere (94.650%) in Leiria; Cadaval (93.674%) in Lisboa; Crato (94.650%) in Portalegre; Baião (94.650%) in Porto; Chamusca (94.592%) in Santarém; Grândola (94.569%) in Setúbal; Melgaço (94.649%) in Viana do Castelo; Mondim de Basto (94.650%) in Vila
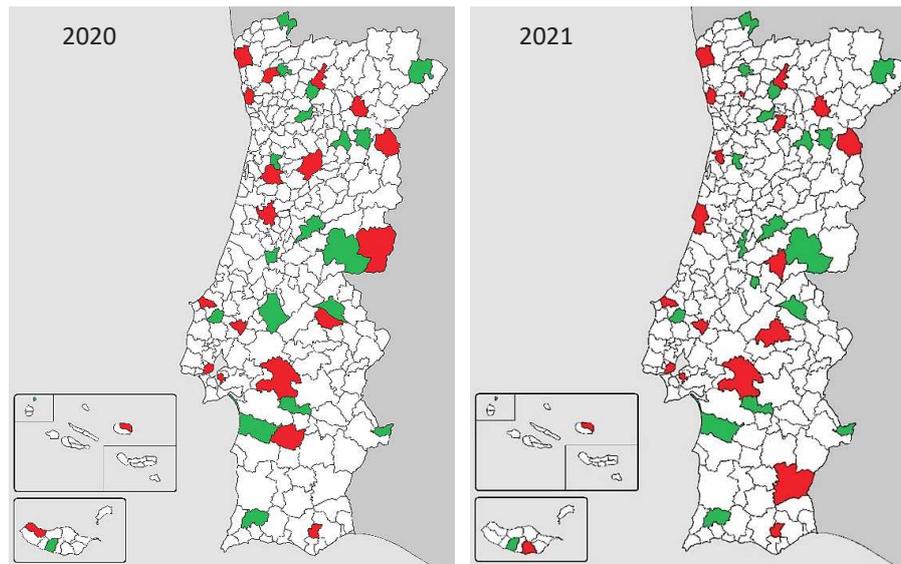
Figure 2. The more (green) and less (red) fiscally attractive municipalities by districts, 2020–2021

Real; and Vila Nova de Paiva (94.650%) in Viseu. In the autonomous regions, São Vicente (94.239%) in Madeira and Corvo (95.128%) in the Azores were found.

The least fiscally attractive municipalities are Águeda (93.372%) in Aveiro; Moura (94.456%) in Beja; Braga (93.597%) in Braga; Carrazeda de Ansiães (93.456%) in Bragança; Idanha-a-Nova (93.594%) in Castelo Branco; Figueira da Foz (93.561%) in Coimbra; Montemor-o-Novo (93.650%) in Évora; Albufeira (93.456%) in Faro; Figueira de Castelo Rodrigo (94.289%) in Guarda; Óbidos (93.508%) in Leiria; Lisboa (93.511%) in Lisboa; Gavião (94.372%), in Portalegre; Marco de Canaveses (93.622%) in Porto; Cartaxo (93.642%) in Santarém; Montijo (93.590%) in Setúbal; Ponte de Lima (93.454%) in Viana do Castelo; Ribeira de Pena (93.733%) in Vila Real; and Lamego (93.590%) in Viseu. On the islands, the study notes the municipalities of Porto Moniz (93.961%) in Madeira and Velas (94.989%) in the Azores.

In 2018 (Figure 3), the following fiscally most attractive municipalities were ascertained: Arouca (95.193%) in Aveiro; Barrancos (95.264%) in Beja; Celorico de Basto (95.263%) in Braga; Vimioso (95.264%) in Bragança; Penamacor (95.264%) in Castelo Branco; Pampilhosa da Serra (95.264%) in Coimbra; Viana do Alentejo (95.193%) in Évora; Vila do Bispo (95.189%) in Faro; Vila Nova de Foz Côa (95.264%) in Guarda; Alvaiázere (95.264%) in Leiria; Cadaval (94.866%) in Lisboa; Ponte de Sor (95.264%)

in Portalegre; Baião (95.264%) in Porto; Vila Nova Barquinha (95.226%) in Santarém; Grândola (95.160%) in Setúbal; Melgaço (95.263%) in Viana do Castelo; Mondim de Basto (95.264%) in Vila Real; and Tarouca (95.264%) in Viseu. In the autonomous regions, the study found São Vicente (95.379%) in Madeira and Corvo (95.950%) in the Azores.

The municipalities that granted a less attractive tax framework were Águeda (94.479%) in Aveiro; Moura (95.014%) in Beja; Braga (94.779%) in Braga; Carrazeda de Ansiães (94.586%) in Bragança; Sertã (94.764%) in Castelo Branco; Figueira da Foz (94.757%) in Coimbra; Montemor-o-Novo (94.836%) in Évora; Albufeira (94.586%) in Faro; Figueira de Castelo Rodrigo (94.800%) in Guarda; Óbidos (94.653%) in Leiria; Lisboa (94.657%) in Lisboa; Gavião (94.907%) in Portalegre; Paços de Ferreira (94.691%) in Porto; Cartaxo (94.825%) in Santarém; Montijo (94.686%) in Setúbal; Caminha (94.575%) in Viana do Castelo; Ribeira de Pena (94.586%) in Vila Real; and Lamego (94.759%) in Viseu. In the islands, the paper notes Porto Moniz (95.021%) in Madeira and Vila Franca do Campo (94.8250%) in the Azores.

The results, relative to 2017 (Figure 4), indicate that the best tax offer was located in the municipalities of Sever do Vouga (95.193%) in Aveiro; Barrancos (95.264%), in Beja; Celorico de Basto (95.263%) in Braga; Vimioso (95.264%) in Bragança; Castelo Branco (95.086%) in Castelo Branco; Pampilhosa da Serra (95.286%) in Coimbra; Redondo (95.286%) in
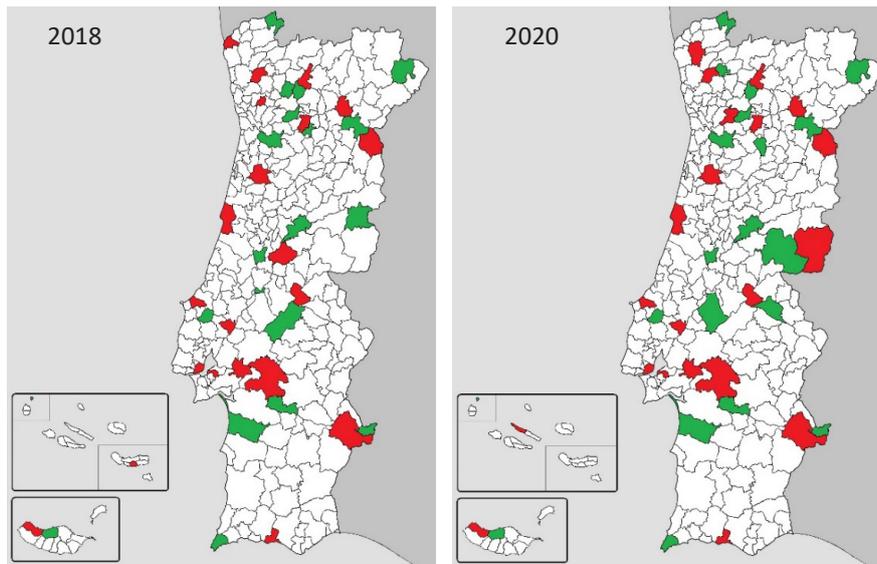
Figure 3. The more (green) and less (red) fiscally attractive municipalities by districts, 2018–2019

Évora; Castro Marim (95.264%) in Faro; Vila Nova de Foz Côa (95.264%) in Guarda; Alvaiázere (95.261%) in Leiria; Cadaval (94.866%) in Lisboa; Ponte de Sor (95.264%) in Portalegre; Baião (95.264%) in Porto; Vila Nova Barquinha (95.227%) in Santarém; Grândola (95.159%) in Setúbal; Melgaço (95.263%) in Viana do Castelo; Mondim de Basto (95.264%) in Vila Real; and Sernancelhe (95.264%) in Viseu. In the autonomous regions, the paper notes the municipalities of Machico (95.379%) in Madeira and Lajes do Pico (95.950%) in the Azores.

The least attractive tax offer, in turn, was in the municipalities of Águeda (94.479%) in Aveiro; Moura (95.014%) in Beja; Braga (94.789%) in

Braga; Carrazeda de Ansiães (94.729%) in Bragança; Idanha-a-Nova (95.179%) in Castelo Branco; Figueira da Foz (94.757%) in Coimbra; Montemor-o-Novo (94.836%) in Évora; Albufeira (94.479%) in Faro; Figueira de Castelo Rodrigo (94.800%) in Guarda; Óbidos (94.653%) in Leiria; Lisboa (94.657%) in Lisboa; Gavião (94.907%) in Portalegre; Paços de Ferreira (94.691%) in Porto; Salvaterra de Magos (94.796%) in Santarém; Montijo (94.757%) in Setúbal; Caminha (94.583%) in Viana do Castelo; Ribeira de Pena (94.586%) in Vila Real; and Viseu (94.764%) in Viseu. On the islands, the municipalities of Porto Santo (94.914%) in Madeira and Vila Franca Campo (94.825%) in the Azores are noted.
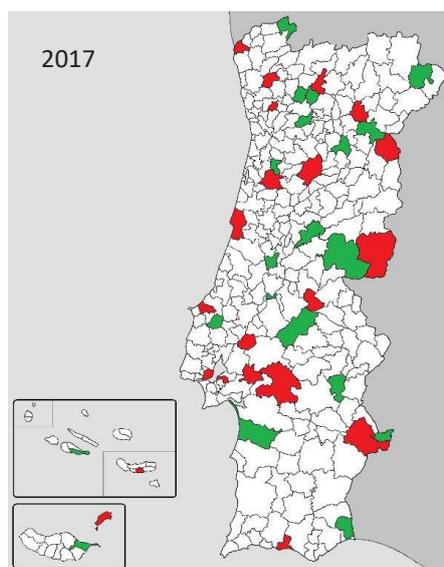
Figure 4. The more (green) and less (red) fiscally attractive municipalities by districts, 2017

Table 2. Results by districts and autonomous regions (2017–2021)

Districts and Autonomous Regions		2021		2020		2019		2018		2017	
		Municipalities	Results	Municipalities	Results	Municipalities	Results	Municipalities	Results	Municipalities	Results
More fiscally attractive	Aveiro	Sever do Vouga	94.4900%	Sever do Vouga	94.5456%	Arouca	94.5940%	Arouca	95.1929%	Sever do Vouga	95.1929%
	Beja	Barrancos	94.6667%	Barrancos	94.6500%	Barrancos	94.6500%	Barrancos	95.2643%	Barrancos	95.2643%
	Braga	Póvoa de Lanhoso	94.6500%	Póvoa de Lanhoso	94.6489%	Póvoa de Lanhoso	94.6480%	Celorico de Basto	95.2629%	Celorico de Basto	95.2629%
	Bragança	Vimioso	94.6500%	Vimioso	94.6500%	Vimioso	94.6500%	Vimioso	95.2643%	Vimioso	95.2643%
	Castelo Branco	Castelo Branco	94.6500%	Castelo Branco	94.6500%	Castelo Branco	94.6500%	Penamacor	95.2643%	Castelo Branco	95.0857%
	Coimbra	Pampilhosa da Serra	94.6500%	Pampilhosa da Serra	94.6500%	Pampilhosa da Serra	94.6500%	Pampilhosa da Serra	95.2643%	Pampilhosa da Serra	95.2857%
	Évora	Viana do Alentejo	94.6500%	Viana do Alentejo	94.6500%	Viana do Alentejo	94.5940%	Viana do Alentejo	95.1929%	Redondo	95.2857%
	Faro	Monchique	94.5111%	Monchique	94.5111%	Vila do Bispo	94.5920%	Vila do Bispo	95.1893%	Castro Marim	95.2643%
	Guarda	Mêda	94.6500%	Mêda	94.6500%	Vila Nova de Foz Côa	94.6500%	Vila Nova de Foz Côa	95.2643%	Vila Nova de Foz Côa	95.2643%
	Leiria	Figueiró dos Vinhos	94.5944%	Alvaiázere	94.6500%	Alvaiázere	94.6500%	Alvaiázere	95.2643%	Alvaiázere	95.2607%
	Lisboa	Cadaval	93.6742%	Cadaval	93.6736%	Cadaval	93.6740%	Cadaval	94.8661%	Cadaval	94.8661%
	Portalegre	Crato	94.6500%	Crato	94.6500%	Crato	94.6500%	Ponte de Sor	95.2643%	Ponte de Sor	95.2643%
	Porto	Baião	94.6500%	Baião	94.6500%	Baião	94.6500%	Baião	95.2643%	Baião	95.2643%
	Santarém	Sardoal	94.5653%	Chamusca	94.5917%	Chamusca	94.5920%	Vila Nova Barquinha	95.2264%	Vila Nova Barquinha	95.2271%
	Setúbal	Grândola	94.5700%	Grândola	94.5694%	Grândola	94.5690%	Grândola	95.1600%	Grândola	95.1593%
	Viana do Castelo	Melgaço	94.6489%	Melgaço	94.6489%	Melgaço	94.6490%	Melgaço	95.2629%	Melgaço	95.2629%
	Vila Real	Mondim de Basto	94.6500%	Mondim de Basto	94.6500%	Mondim de Basto	94.6500%	Mondim de Basto	95.2643%	Mondim de Basto	95.2643%
	Viseu	Sernancelhe	94.6500%	Sernancelhe	94.6500%	Vila Nova de Paiva	94.6500%	Tarouca	95.2643%	Sernancelhe	95.2643%
	A.R. of Madeira	Ribeira Brava	94.2389%	Ribeira Brava	94.2389%	São Vicente	94.2390%	São Vicente	95.3786%	Machico	95.3786%
	A.R. of Açores	Corvo	95.1278%	Corvo	95.1278%	Corvo	95.1280%	Corvo	95.9500%	Lajes do Pico	95.9500%

Table 2 (cont.). Results by districts and autonomous regions (2017–2021)

Districts and Autonomous Regions	2021		2020		2019		2018		2017	
	Municipalities	Results	Municipalities	Results	Municipalities	Results	Municipalities	Results	Municipalities	Results
Aveiro	Estarreja	93.3694%	Águeda	93.3722%	Águeda	93.3720%	Águeda	94.4786%	Águeda	94.4786%
Beja	Mértola	94.3681%	Ferreira do Alentejo	94.2847%	Moura	94.4560%	Moura	95.0143%	Moura	95.0143%
Braga	Vizela	93.5903%	Braga	93.5922%	Braga	93.5970%	Braga	94.7786%	Braga	94.7893%
Bragança	Carrazeda Ansiães	93.4556%	Carrazeda Ansiães	93.4556%	Carrazeda Ansiães	93.4560%	Carrazeda Ansiães	94.5857%	Carrazeda Ansiães	94.7286%
Castelo Branco	Proença-a-Nova	93.5944%	Idanha-a-Nova	93.5944%	Idanha-a-Nova	93.5940%	Sertã	94.7643%	Idanha-a-Nova	95.1786%
Coimbra	Figueira da Foz	93.5611%	Coimbra	93.3722%	Figueira da Foz	93.5610%	Figueira da Foz	94.7571%	Figueira da Foz	94.7571%
Évora	Montemor-o-Novo	93.6778%	Montemor-o-Novo	93.6500%	Montemor-o-Novo	93.6500%	Montemor-o-Novo	94.8357%	Montemor-o-Novo	94.8357%
Faro	São Brás de Alportel	93.4494%	São Brás de Alportel	93.4494%	Albufeira	93.4560%	Albufeira	94.5857%	Albufeira	94.4786%
Guarda	Castelo Rodrigo	94.2889%	Castelo Rodrigo	94.2889%	Castelo Rodrigo	94.2890%	Castelo Rodrigo	94.8000%	Castelo Rodrigo	94.8000%
Leiria	Óbidos	93.5078%	Óbidos	93.5078%	Óbidos	93.5080%	Óbidos	94.6529%	Óbidos	94.6529%
Lisboa	Lisboa	93.5111%	Lisboa	93.5111%	Lisboa	93.5110%	Lisboa	94.6571%	Lisboa	94.6571%
Portalegre	Avis	94.3167%	Alter do Chão	94.2889%	Gavião	94.3720%	Gavião	94.9071%	Gavião	94.9071%
Porto	Vila do Conde	93.3722%	Vila do Conde	93.3711%	Marco de Canaveses	93.6220%	Paços de Ferreira	94.6911%	Paços de Ferreira	94.6911%
Santarém	Cartaxo	93.6417%	Cartaxo	93.6417%	Cartaxo	93.6420%	Cartaxo	94.8250%	Salvaterra de Magos	94.7964%
Setúbal	Moita	93.3683%	Moita	93.3683%	Montijo	93.5900%	Montijo	94.6857%	Montijo	94.7571%
Viana do Castelo	Viana do Castelo	93.3689%	Viana do Castelo	93.3689%	Ponte de Lima	93.4540%	Caminha	94.5750%	Caminha	94.5829%
Vila Real	Ribeira de Pena	93.7333%	Ribeira de Pena	93.7333%	Ribeira de Pena	93.7330%	Ribeira de Pena	94.5857%	Ribeira de Pena	94.5857%
Viseu	Lamego	93.5908%	Viseu	93.5944%	Lamego	93.5900%	Lamego	94.7586%	Viseu	94.7643%
A.R. of Madeira	Funchal	93.9333%	Porto Moniz	93.9611%	Porto Moniz	93.9610%	Porto Moniz	95.0214%	Porto Santo	94.9143%
A.R. of Açores	Praia da Vitória	94.7667%	Praia da Vitória	94.7667%	Velas	94.9890%	Vila Franca Campo	94.8250%	Vila Franca Campo	94.8250%

Less fiscally attractive
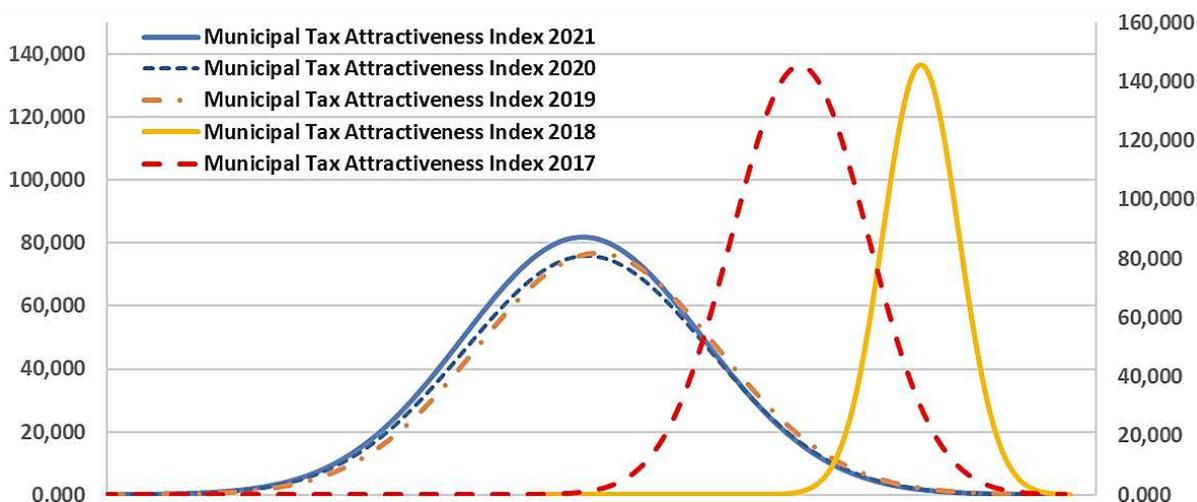
Figure 5. Gaussian distribution curves of the levels of fiscal attractiveness (2017 to 2021)

The tax attractiveness of municipalities, obtained through the methodology adopted and verifiable in Tables 1 and 2, results essentially from the existence of local tax policy options that allow economic agents to benefit from a set of reduced tax rates, lower municipal public rates, and specific tax benefits, by initiative or decision of local and central authorities.

From the results obtained, the Gaussian distribution method was applied to observe the discrepancy or approximation of the local tax supply. Figure 5 presents the distribution curves obtained for municipal tax attractiveness levels from 2017 to 2021.

As can be seen, the results exhibit a higher mean and standard deviation in the years 2017 and 2018; that is, there is a more significant difference between the municipal tax supply in Portugal. In the years 2019 to 2021, the Gaussian distribution curve shows a smaller difference and a greater approximation between the local tax supply. That is, the number of municipalities that offer better tax attractiveness conditions is higher compared to 2017 and 2018.

Suppose the tax offers from 2019 to 2021 are more varied, as it is possible to observe in the Gaussian distribution curve, especially through a greater spacing of the extremes of the curve. In that case, it results from more competitive tax solutions by the individual municipalities, suggesting some degree of tax competition among them.

Municipal competition is verifiable by the fact that, for the years under analysis, the analysis observes a

flattening of the curve, which means that the averages of the results obtained in the 308 Portuguese municipalities are close to each other, which seems to result from the adoption of identical local tax policy measures. This flattening of the curve also reflects some measure of inter-municipal competitiveness, which translates, in a second moment (after the individual adoption of measures of greater individual fiscal attractiveness), into a reduction or blurring of the differences in fiscal attractiveness between municipalities.

Suppose the curves of the Gaussian distribution suggest that there is greater tax competition among Portuguese municipalities. In that case, many municipalities adopt similar or very close tax policies.

4. DISCUSSION

The fiscal attractiveness index is an instrument able to assist the decision of economic agents in the location of their productive investment. This index also allows Portuguese municipalities to know the efficiency of their tax policy decisions and the national tax options in promoting their individual tax attractiveness, compared to other municipalities, within the established development objectives, aiming at attracting new investments.

The study confirms the findings of Bartolini et al. (2016), i.e., Portuguese municipalities have the power to shape tax policy to their local development interests. However, as Blöchliger (2016) al-

ludes, effects are still understudied at various levels and widely varying levels of fiscal decentralization, especially among OECD states.

As argued by the OECD (2015), the study also proves the existence of an intensity or measure of tax competition at the local governance level, which depends on taxpayers' willingness and effective ability to make investments or relocate to other municipalities depending on perceived competitiveness.

The OECD (2013) argues that the geographical mobility of subjects is only a form of reaction to local tax policy changes. Theory confirms the OECD position; however, the study also suggests that situations of relocation of economic operations may result from tax changes, i.e., they are a reaction to observed policies and policy alternatives developed and implemented in other municipalities. On the other hand, they may also arise from pressure from the local electorate.

Lyytikäinen (2012), in relation to Finnish municipal tax policy, concludes that there is empirical evidence indicating the existence of a "local tax market," i.e., a "tax competition" between municipalities. The results support the position, as municipalities present different options for tax attraction policies, ranging from 94.479% to 95.950%.

Despite the variety of the "tax offer," Madura (2014) mentions that the willingness of subjects to relocate their tax domicile depends on their eco-

nomic characteristics and that these are quite different. For Corak (2013), it tends to be the higher, the higher the income, since the potential gain in tax terms is, in principle, also higher. The results suggest that the level of tax attractiveness of Portuguese municipalities is distinct and, naturally, a picture of potential tax gains is also diverse.

Coimbra et al. (2011) conclude that the taxes demanded locally vary according to tax policy, with a clear impact on attractiveness. This puts Portuguese municipalities in direct competition. This conclusion aligns with the results, as it is possible to observe that the most and least fiscally attractive municipalities exhibit considerable territorial proximity.

This study uses a legal-economic approach in developing and analyzing the fiscal attractiveness indicator for Portuguese municipalities and presents suggestions for future research. Despite the intense academic debate on the erosion of tax bases, studies and empirical evidence on the real impacts of tax competition at the local level are still scarce. One of the main reasons for the need for more in-depth studies is that tax interactions and tax-induced mobility are considerably challenging to isolate and measure. Still, the municipal tax attractiveness index, developed in this study, allows for measuring the estimated tax burden and ranking the tax attractiveness of Portuguese municipalities, allowing economic agents to know which are the most attractive municipalities.

CONCLUSION

The objective of this study is to describe and understand the phenomenon of decentralization and infra-national fiscal competitiveness. After describing the phenomenon, the paper seeks to understand the reasons that explain the relationship between the concepts under analysis through the study of relevant literature and the characterization of the powers for shaping the tax system detained by Portuguese municipalities.

The study proposes that political decentralization has allowed the attribution of increasing taxing powers to Portuguese municipalities, putting the issue of inter-municipal competitiveness on the agenda.

This result shows that, despite the inherent complexity of the Portuguese tax system, it is possible to develop a measuring instrument with a certain degree of simplicity and objectivity that allows ranking municipalities based on their degree or level of tax attractiveness. This can generate two beneficial effects. On the one hand, it encourages healthy competitiveness within the limits and principles of the law and can configure an aspect of an area still under development (territorial marketing). On the other hand, it is an instrument to support economic investment decisions.

The study concludes that there is some measure of tax competition between municipalities in Portugal. This has led to an increase in inter-municipal competitiveness, even if it seems complicated to empirically demonstrate voters' preferences or the extent of tax-induced subject mobility.

The study also suggests that the municipalities with the highest levels of attractiveness are those located in the autonomous regions (Azores and Madeira Islands) and the municipalities located in the interior of the mainland.

AUTHOR CONTRIBUTIONS

Formal analysis: Ricardo de Moraes e Soares, Pedro Pinheiro.
Investigation: Ricardo de Moraes e Soares.
Methodology: Ricardo de Moraes e Soares.
Project administration: Ricardo de Moraes e Soares.
Resources: Ricardo de Moraes e Soares, Pedro Pinheiro.
Software: Ricardo de Moraes e Soares.
Supervision: Ricardo de Moraes e Soares.
Visualization: Ricardo de Moraes e Soares, Pedro Pinheiro.
Writing – original draft: Ricardo de Moraes e Soares.
Writing – review & editing: Ricardo de Moraes e Soares, Pedro Pinheiro.

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