Understanding the Shrinkage Phenomenon in Portugal

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Abstract:Diverse regions in the Europe and the United States are related with loss of population and economic activity. While there are zones that have kept a dynamic of attraction of new residents, others, in opposition, present a persistent loss of population. The causes and consequences of the decrease of the population have already been studied. On the other hand, studies evaluating the impact of the decline of inhabitants in the local finances are scarce. The effects of the decreasing of population in the local public budgets in countries as Portugal assume a major importance, because local governments' income depends in great measure on the number of inhabitants. The object of this article is to perceive how population decline in the Continental Portuguese municipalities with cities have affected the "budgetary health" and evaluate if local governments of urban and rural municipalities are alike regarding the way they deal with shrinkage. The data shows that the majority of the municipalities with cities with persistent decline in the number of residents have not yet began to adjust by decreasing public expenditures. The article also considers the effects in public expenditures faced by municipalities with a recent shrinkage process. It was found evidence that municipalities with cities look for to prevent or to postpone shrinkage by favouring certain public spending in the attempt to attract young population instead of adapting the municipality to the new reality and adjust growth in smaller size. Using the Alentejo region, a region that is predominantly shrinking as a whole, is found evidence that more rural municipalities began to accept the decrease of inhabitants and began to adjust the public expenditures profile towards the elderly.

Key-Words: Shrinking municipalities, regeneration strategies, sustainable municipalities, local finance, urban planning.

1Introduction

In the opening years of the twenty-first century, the phenomenon of shrinking cities has many examples in most developed countries [1]. According to Wiechmann [2], 54% of the European cities lost population in the period from 1996 to 2001. The phenomenon of urban shrinkage is based on several processes of transformation [3]. According to Fernandez and Wu [4], the essential forces that cause urban decline have been Industrialization/Deindustrialization, Globalization, Population Transition and Climate Change.

Shrinking cities have used several strategies to address the problem [5, 6]. Shrinking smart [7] and smart growth [8] strategies emerge as the most common solutions [9]. Planning approaches dealing with smart shrinking strategies can be grouped in two categories: greening and re-sizing, while smart growth strategies are oriented to alter the population decline process.

In the literature we can find a lot about the traditional approach on the urban planning and urban economy, which has been concerned with growth and in its consequences. The subjects related with the population growth are extensively studied and even deserve the attention of many researchers; the study of the inverse phenomenon: the reduction of inhabitants and its implications has been relatively scarce. In fact, the abandonment of the urban spaces raises a new set of problems, comprehending diverse issues such as, for instance, the aging of the population or the sprawl into the periphery.

The study of the effects of population decline has started in the United States [10] as the result of the abandonment from cities of inhabitants and economical activities (example: Detroit or Chicago with losses, respectively between 1950 and 2000, of 49 and 20% of its inhabitants). However, the inquiry on the causes and consequences of the loss of population in the Europe are still in a development phase, being significant part of this stimulated by the existence of a European Cost project with the assignment "Cities growing smaller".

According to Hollbach-Grömig and Trapp [11], in the scope of a work produced for Council of European Municipalities and Regions - CEMR, the European active population will decrease 20.8 million, between 2005 and 2030, implying that, in a short future,

governments will inevitably have to deal with the fact of having parts of the Europe losing inhabitants. The decreasing birth rate and the increase of the average life expectancy contribute for this situation [12, 13].

This paper presents the evolution of inhabitants in the municipalities with cities of Portugal and studies the implications for local governments' finances. The analysis shows how public expenditures evolve in municipalities with cities that registered decline in the number of inhabitants in the last 10 and 5 years. These results are then confronted with the particular case of Alentejo region that is significantly losing population during the last decade.

Using panel data estimation, the paper shows that changes in the age structure of inhabitants in municipalities with cities and persistent loss of population does not generate public spending prone to the elderly. As predicted by the literature, local governments do not accept shrinkage as inevitable, adopting strategies aiming to maintain infrastructures and targeting them to the younger age groups, leading to an oversized provision. In contrast, the desired adjustment of public services to the needs of the aging population is sacrificed.

When the analysis looks at more rural municipalities such as many of Alentejo region, a different picture is found. Those municipalities began to accept the population decline, adjusting the public expenditure composition towards the elderly preferences. We can call this behaviour a smart shrinkage strategy, since intents to provide better life conditions to those inhabitants that remain in the municipalities.

The paper is organized as follows. Section 2 gives a general view of the problematic analysed in this paper by presenting a literature review of the works related with shrinkage of population, the consequent public finance implications and policies to deal with it. Section 3 introduces the case of Portugal by showing the specificities of the country at local level and the results of a set of estimations on how local governments react when faced with a decrease in the number of local inhabitants as well as in their composition. Section 4 concludes.

2. Literature review

2.1. Population shrinkage

Changes in the number of inhabitants in the jurisdictions, whether they are countries, regions, counties or cities, are part of the regular dynamics faced by territories. Although the decline is part of the historical evolution of places, including the cities [7], the literature on urban planning is oriented to solve problems that result from growth, from which emerges the problem of geographic dispersion. The advent of globalization has widened these dynamics as international competition has blurred national boundaries, implying that smaller jurisdictions, with no comparative advantages, observe a persistent decline in economic activity and, consequently, of its population. The peripheral jurisdictions are particularly vulnerable because they are not even among the decision centers or connected with the main international networks [12].

The loss of population in major cities worldwide is documented by Oswalt and Rieniets [14]. The authors identified, over the past fifty years, about 370 cities with a decrease of at least 10% in the number of inhabitants. This phenomenon generates the existence of vacant and abandoned houses, but also brings opportunities related to the increase of green spaces and the recovery of natural systems. These cities face challenges and become more productive and environmentally sustainable, though with fewer inhabitants [15].

The loss of inhabitants is a fact for many jurisdictions in Europe and the United States. In Europe, particularly in Germany, has been growing the concern about the out-migration of the inhabitants in certain areas, especially the former East Germany, such as the province of Leipzig. This phenomenon is also found elsewhere in the world, such as in Brazil, where the advent of globalization during the 80s and 90s led to a change in the territorial profile of the country, with the consequent displacement of the economically most fragile to the edges of cities, generating situations of illegal occupation [16].

Although a reality repeatedly found, the loss of inhabitants is a taboo issue for local governments, prepared to deal with the results of a progressive growth but unable to manage the consequences of population decline. This behaviour is rational because the criticism of the voters [3]. Local governments by accepting the loss of inhabitants, which generates a spiral of loss of revenue and, therefore, more inhabitants loss, through the provision of fewer public goods, is seen by voters as a give up position. This forces local governments to seek, by all means, growth to avoid political suicide that most likely occurs if the decline was made public.

Under this framework, local governments tend to delay the recognition of the process of shrinkage or adopt strategies to reverse it, trying to bring the

jurisdiction back to growth. With this purpose, jurisdictions are tempted to pursue strategies that bring tax advantages such as competing with neighbouring jurisdictions for the construction of shopping centers to attract economic activity [17]. Panagopoulos and Barreira [18], for the Portuguese case, state that policies implemented by local governments try to contain the abandonment of inhabitants, ranging from the allocation of social benefits to families who want to get married and move-on into a given municipality to the practice of lower tax rates on economic activity than in neighbouring municipalities. However, most of these policies did not achieve significant results in curbing the phenomenon of shrinkage.

2.2. Impact on local finances

The impact on local finances resulting from the reduction in the number of inhabitants and therefore in the number of taxpayers do not have any theory to clarify what are the prospected implications [19]. Although there is no theory to help predicting how local governments react to loss of revenue as the number of inhabitants decrease, the issue of the impact of loss of government revenue in local budgets has received specialized attention in recent years, following the rental house crisis that affected the United States and Europe [20, 21, 22]. Under this new reality, some works have recently appeared, for the American case, discussing how local governments can achieve sustained provision of local public goods and "health" budgets with fewer financial resources [10, 23].

There is yet another area of research with implications for local finance: the change in age composition of inhabitants, even if population growth. Strömberg [24], using the cities of Sweden, shows that increasing the proportion of elderly in society originates an increase of 7% of spending in public goods preferred by this age group. Seitz [25], for the German case, identifies that slightly demographic composition changes increase public expenditure prone to the elderly but does not change public spending targeted towards young people at school age. Hofmann et al. [26] report, however, that the bias of public spending for the elderly depends on the level of government.

Although there are studies that discuss the budgetary implications for local governments resulting from loss of revenue, research on the implications of the number of inhabitants' reduction are, however, scarce, being Koziol [13] one of the few exceptions. One of the factors that impact more on local finances is precisely the decrease of inhabitants [21]. Seitz and Kempkes [27] identify, for Germany, that the reduction of 1% of the population has an effect of the same magnitude in the revenue of local governments. Simultaneously, the reduction in the inhabitants in a jurisdiction also raises another challenge to local governments: to manage the oversized public services. However, the downsizing of public services is unnatural because local governments expect, in the near future, to be able to grow again [28].

At the same time, local governments are faced with the inability to adjust the provision of public service to the needs of population that do not move-out, usually the older population, creating a mismatch between demand and supply of services. The expectation of future growth makes local governments resistant to reductions in the infrastructure size. The maintenance of schools is a good example, even when young population is clearly in decline. Disinvesting in schools accentuate the process of shrinkage since households would seek another jurisdiction nearby, with better schools, typically also with more financial resources [29, 30].

Geys et al. [31] refer that the effects of population loss are not indifferent to the size of jurisdiction, noting that the small jurisdictions are more vulnerable to pressures for increasing public spending. Thus, the effects of demand reduction in the cost of infrastructure should be analysed at a micro scale. Schiller [32] proposes a methodology to calculate the extra costs and, consequently, the public expenditure resulting from the decline in population, recognizing that further research is still needed in this area.

2.3. Strategies to cope with shrinkage

Planners talk about smart growth, but only recently talking about smart decline become on the agenda. The idea is that if municipalities can grow in a smart way, they can also shrink smartly. Municipalities are shrinking smart by returning abandoned neighbourhoods to nature, increasing walking spaces, making urban space more liveable and housing more affordable.

The concept of Smart Growth to land development is very often adopted in many shrinking cities [8]. The term describes development strategies that do not promote urban sprawl. Smart growth adopted from many cities that are using creative strategies to develop in a way that preserve natural lands and critical environmental areas, protect water and air quality, and reuse already-developed land. The cities adopting this concept conserve resources by recycling the existing infrastructure and restoring historic buildings.

Shrinkage smart strategies imply the reconfiguration of infrastructures to the new dimension of population, increasing often per capita spending. However, not all infrastructures are equally capable to readjust to shrinking population figures, being the water and sewerage supply the most inelastic. Under this overprovision of services, local public budgets sustainability would only be feasible with gradual grants from central governments [33]. Seitz and Kempkes [27] found, for Germany, that 1% population decrease generates a similar loss on tax revenues of sub-national governments.

The planning tools most widely used are prone to new development of land, new construction and more public infrastructure as an incentive to attract economic activity, while during shrinkage the required public intervention, in contrast, should favour the recycling of land and buildings or the adaptation of public facilities to meet the residents' changing needs [34]. In fact, planning for shrinkage is fundamentally different from planning for growth [35].

Glaeser and Gyourko [36] state that growth typically results in rapid population increases with stable house values, while decline is associated with slow population decline with rapid property devaluation. The most widespread strategies to deal with shrinkage emerge from the American and German experiences that were confronted with huge vacant housing problems. In the United States, political intervention is more in affinity with growth where shrinkage is seen as a kind of stigma [37, 38, 39].

Local authorities of Germany had to rethink land occupation. The governmental initiatives in Germany cover a wide array of interventions. Many opt for promoting policies toward the revitalisation of city centres, consequently deactivating underused public services, and demolishing vacancies. Some are concerned with altering the physical footprint of the cities, such as turning existing brown fields into green spaces [40, 41, 42, 43]. Other common local policy followed in Germany concerns the transformation of declining cities into "creative knowledge cities". When cities succeed in attracting or retaining high-skilled human capital, this tends to be positively correlated with population growth and a better quality of life [44].

3. Local governments in Portugal

3.1 Characterization

Portugal is described by international entities (IMF, OECD) as a predominantly centralized country, being the power of budgetary decision very concentrated in the central government. With exception of the two autonomous regions: Madeira and Açores, Continental Portugal has no regions. In the Continent, only two levels of government coexist: the central and the local. The local level is composed of elected local governments that manage municipal budgets. The municipality is thus the geographic division that delimits the authority of each local government, assigned for the City council.

In Portugal there are 308 municipalities, of which 278 in the Continent. Only 42% of the local governments have their headquarters located in a city because the other municipalities have no cities within their boundaries. The cities of the Continent are distributed geographically as follows: 49 in the North, 43 in the Centre, 17 in Lisbon, 19 in Alentejo and 11 in the South - Algarve. According with the last Census of 2011, the biggest city of the Continent is the capital - Lisbon - with about 548 thousand inhabitants, followed by Oporto with 238 thousand inhabitants. About 4.2 million inhabit in the cities of the Continent, in 2011, corresponding to 42% of the population. Those cities have an average of 31 thousand inhabitants.Each municipality with cities have on average 66 thousand inhabitants, being the correspondent average value of 36 thousand inhabitants when whole Continental municipalities are considered.

The 139 Continental cities belong to 117 municipalities. We differentiated the 117 municipalities with cities by distributing them into three typologies: 63 with demographic growth, 29 with persistent decline of population and 25 with recent decline in the number of inhabitants. These data mean that 46.2% of the municipalities with cities of the Continent are shrinking. Figure 1 presents the municipalities that fit in each of the typologies. Data covers only up to 2009 due the lack of information regarding public finance afterwards.

This paper focuses in the population and the economic activity evolution of municipalities with cities, since municipality is the territorial unit for which exists relatively sufficient statistic information in an annual base. According to the data, Lisbon lost, during the 11 years considered in the analysis (1999-2009), 18.2% of inhabitants, (around 107 thousand inhabitants), while Sintra, a neighbouring municipality gained 31.6%, corresponding to more than the 109 thousand inhabitants. The same have happened in Oporto, the second more important city of Portugal, whose city lost, during this period, almost 22% of its population, the biggest relative loss of the Country. On

the other hand, the neighbour municipality of Gaia gained 13.5% of new inhabitants.

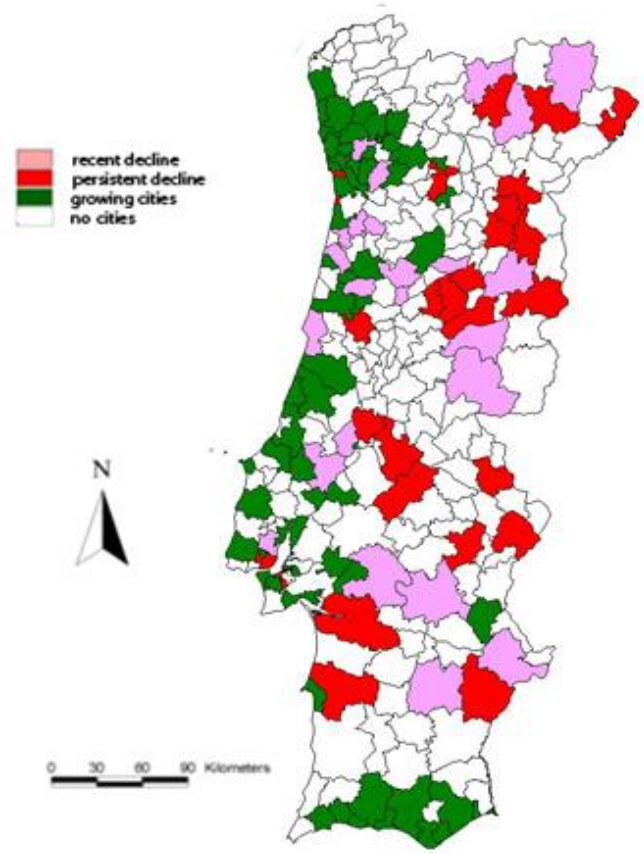

Figure 1 - Typologies of municipalities with cities, according with population evolution, in Portugal, between 1999-2009.

3.2 The municipal revenues

Of the 54 municipalities with cities with population loss, only 13 faced during the last 11 years a reduction in municipal revenues, which means that only about ¼ of the municipalities with less population saw its budget become "shorter". Moreover, only in 10 of these municipalities occurred a real reduction in taxes from real estate transactions (IMT), and only in 6 was registered a reduction on grants from central government.

When the analysis focuses on the municipalities that, though losing inhabitants, are not facing revenues decrease, we observe that in most cases this is due to the significant rise in grants from central government. This grant increase implied that even municipalities with cities and significant losses in taxes associated with the transaction of the property (IMT) - 10 municipalities with a persistent decline and 13 municipalities with a recent decline, have not registered reduction in their global revenues.

This result is significant because it shows that the loss of inhabitants has not resulted in a budgetary reduction of revenues for most municipalities, since the mechanism of grants from central government has overcome the revenue loss associated with the real estate transaction. In the absence of those grants, 28 of the 54 municipalities with declining population, accounting for more than 50% of the municipalities in these conditions, would have seen their budgets stabilize or even decline, which would imply, in a near future, an increase on their level of indebtedness.

3.3 The municipal expenditures

In aggregate terms, some of the municipalities with cities and persistent loss of inhabitants (7 in 29) have come, gradually, to reduce the public expenses, evidencing some effort of budgetary consolidation. However, the majority of municipalities with severe shrinkage do not began yet to adjust. During the eleven years considered, public expenditures increase more than 10% in the municipalities with persistent shrinkage, which is however smaller than the increasing of 76% in municipalities with recent shrinkage or of 68% in growing municipalities. The public expenditure increase was not accompanied by correspondent receipts that only improved in 7, 47 and 36%, respectively.

When the analysis is on public expenditure per capita, the number of municipalities with severe shrinkage that decrease expenditures reduces to three: Trancoso, Lisbon and Barreiro. These results are preoccupying because of the 29 municipalities with cities and persistent loss of inhabitants, 6 have already a negative evolution in public receipts. All the 25 municipalities with a more recent process of shrinkage remain increasing public expenditures both in absolute and in per capita base.

The analysis on how municipalities that face severe or recent shrinkage react by changing public expenditures composition is carried out for those municipalities with increasing public expenditure per inhabitant. The objective is to perceive if public expenditure of the municipalities with cities and persistent or recent decline of the population is affected by changes in the age structure of the inhabitants. For this purpose we estimated a model for each situation.

The considered dependent variable is public expenditure per inhabitant, while independent variables considered are the number of young with less than 15 years, the number of old citizens with more than 65

years and the number of the employed. The dependent variables are introduced into the model with a time lag. All the values have been transformed into natural logarithms to allow interpreting the coefficients as economic elasticities. We use fixed effects estimations with cross-section weights and White heteroskedasticity-consistent standard errors and covariance.

Pooled Ordinary Least Squares estimates (POLS) are commonly used, although the standard assumptions about the error processes are often violated, namely because errors tend to be serially correlated across time and cross-sections and tend to be groupwise heteroscedastic. If errors observe some of those effects, then the POLS estimates of the parameters will be consistent but inefficient. The violation of the assumptions about error processes can also be caused by model specification.

To deal with this problem, literature suggests the use of either of the two procedures: estimate a fixed effect model or a random effect model. Wooldridge [45] states that the distinction between the two models lies in the treatment of constant values. For the fixed effects model constant values are fixed, while for the random effects model the values listed are random variables. The author also points out that the fixed effects model are constant values that capture the behavioural differences of the units, i.e., that capture cross-section heterogeneity. In the random effects model are errors that capture the differences between units. This model performs deeper analysis, taking account of whether the residues are correlated with variables. Under the specific circumstances of the study, the fixed effects estimation is the chosen process when a Hausman test is performed.

The general form of the estimated model is given by:

$$Exp_{i,t} = \alpha_i + \beta_i\ young_{i,t-n} + \gamma_i\ old_{i,t-n} + \\ + \Omega_i\ employment_{i,t-n} + \varepsilon_i$$

The first estimated model (Table 1) considers the 26 municipalities with persistent shrinkage in inhabitants and increasing public expenditure per capita. Figure 2 shows the considered municipalities.

Table1 shows that the decrease in 1% of the youngest increases per capita public expenditures in 1.4%. On the other hand, the increase of 1% in the number of old citizens reduces public expenditures in 0.4%. Moreover, municipalities react faster to changes in the number of the young than of the old. Any change in the number of the young inhabitants generates almost an immediate response (with one year lag), while changes in the number of old people only impacts public expenditure in the medium term (it takes four years).

Table 1 - Estimates of the factors contributing for the increase of public expenditure per capita in municipalities with cities and persistent decline of inhabitants.

	Coefficient	t-Statistic
young(-1)	-1.36938	-15.0221*
old(-4)	-0.444365	-4.8436*
employment(-3)	0.324852	8.8368*

Durbin-Watson stat	1.921
Adjusted R2	0.999
F-statistic	4676.259
Sum squared resid	0.535

* Statistically significant a 1%

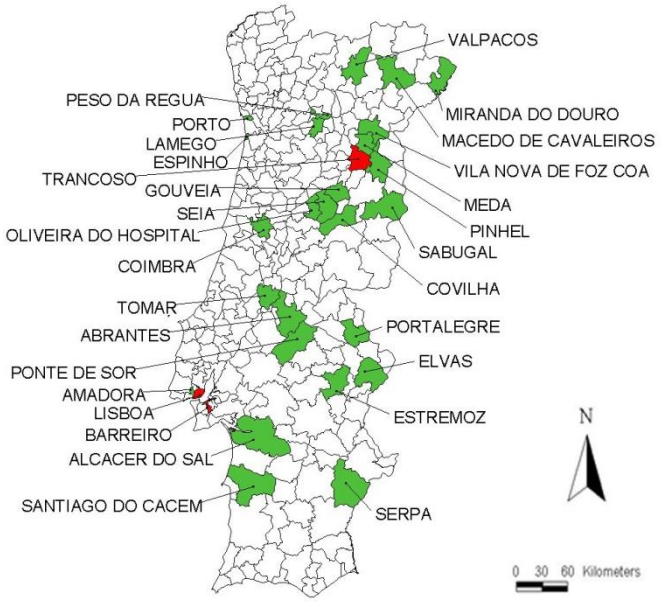

Figure 2. Municipalities with cities with persistent population decline even that public expenditure per inhabitant grew between 1999 and 2009, while in red color municipalities with decreased public expenditure.

There is here clearly a transfer in the composition of the public expenditures for a reinforcement of the expenditure prone to the young, in an attempt to oppose the desertion of families from those municipalities. This is a despair strategy to avoid recognizing the shrinkage process as inevitable. By not accepting the process,

public entities generate unsustainable public deficits. The generation of employment in those municipalities slightly induces a growth in the public expenditure.

Figure 3 presents the 25 municipalities considered for the second estimation and correspond to municipalities with cities and a recent shrinkage process, all of them observing an increase in public expenditures per capita. The estimated function is similar to the previous model with the difference that employment is a relevant variable with a lag of only two periods.The estimation results are presented in Table 2.

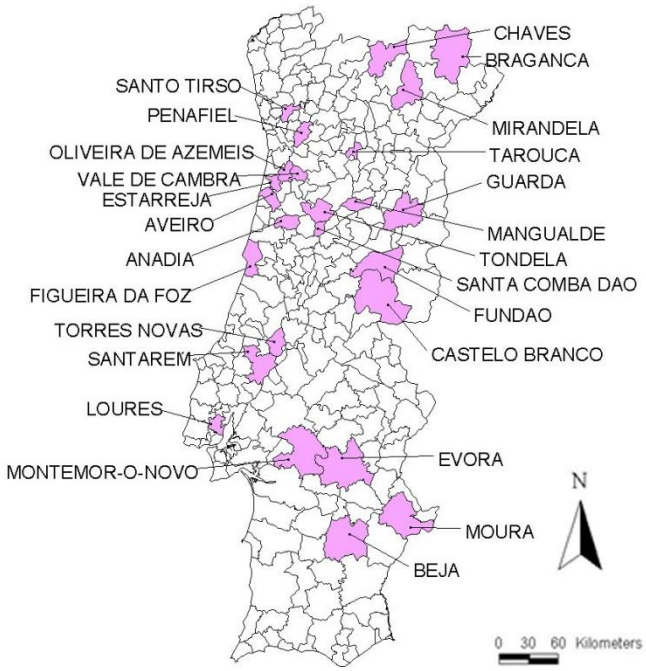

Figure 3.Municipalities with cities, recent decline of inhabitants and increase in public expenditure per inhabitant, between 1999 and 2009.

When the results of the two models are compared, municipalities with a recent shrinkage process are even more reactive to changes in the number of the young. This is a response in an attempt to not fall in the same irreversible path of those municipalities with persistent shrinkage. The increase in public expenditure per capita is about 2% for a 1% change in the number of the youngest. This explains why public expenditure in municipalities with recent shrinkage process has increased more than average, as already referred. In opposition, the increase of the oldest only has a small impact in the public expenditures. This is symptom that public expenditures deviate from the categories this age group requires more. Employment has a similar impact on budget as the one previously registered.

Table 2 - Estimates of the factors contributing for the increase of the public expenditure per inhabitant in the municipalities with cities and recent decline of inhabitants.

	Coefficient	t-Statistic
young(-1)	-1.91148	-11.8268*
old(-4)	-0.170390	-2.6430*
employment(-2)	0.335462	5.0523*

Durbin-Watson stat	1.811
Adjusted R2	0.999
F-statistic	5068.796
Sum squared resid	0.581

* Statistically significant a 1%

These results are in compliance with the literature, confirming what were observed in other countries where the local governments do not accept the decrease of the population, keeping infrastructures guided for the young, dimensioning them well above the necessities of the inhabitants. This municipal strategy intends to captivate new residents, changing the composition of the expenditure in favour of the youngest population, favouring, for example, the creation of day-care centres, kindergartens and the maintenance in functioning of schools. Accepting the decline of the population would imply a skew of public expenditure in favour of the aged, providing services and infrastructures guided for their necessities.

The results indicate precisely the opposite. The aging of the population decreases public expenditure while the reduction in the number of the young increases. Maintaining the investment in modern schools, for instance, in municipalities that lose consistently population, do not reverse shrinkage. This kind of policy only contributes for oversized infrastructures, implying not sustainable local public expenditures.

3.4. From general to particular perspective

The Alentejo region comprises 58 municipalities and five areas: Alentejo Litoral, Alto Alentejo, Alentejo Central, Baixo Alentejo and Lezíria of Tejo, corresponding to 7.4% of the population and 33% of the territory of the Continent. In the region there are only 19

municipalities with cities, comprehending 57% of the inhabitants. In these municipalities the population declined 68% between 1999 and 2009. In the other municipalities the decline was even bigger - around 200%.

Alentejo is therefore a region where the phenomenon of shrinkage takes a special place in the context of the country. Under this particular framework, it is important to understand how local governments behave when confronted with this kind of phenomenon in a so extended way.

Figure 4 shows the municipalities of the region Alentejo which include cities and are shrinking (in yellow colour), compared to the rural only municipalities in blue colour. Table 3 presents the estimation results using the total 43 shrinking municipalities of the region.

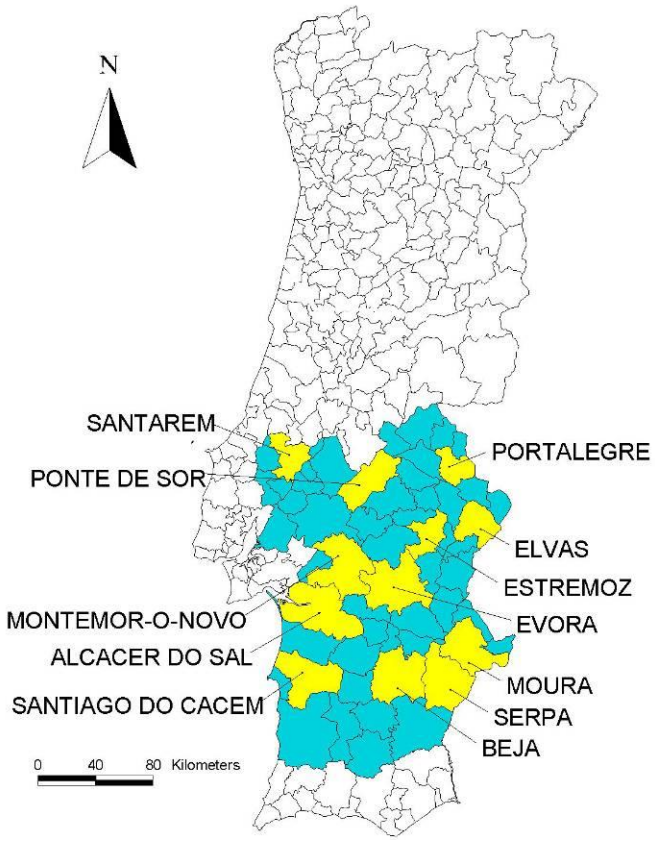

Figure 4. Shrinking municipalities of Alentejo between 1999 and 2009 In yellow are the municipalities with cities and in blue are only rural).

The Alentejo shows some features that distinguishes this region. The municipalities that are losing population are not losing economic activity: the case of shrinking in inhabitants without shrinking economy. The region has municipalities that concentrate economic activity, particularly tertiary and others that are mainly "sleeping places". Unlike most urban municipalities that try to counter the phenomenon of population loss, the Alentejo appears to have accepted the process. The municipalities are more reactive (respond within a shorter time) to the elderly increase, increasing public spending towards that group of inhabitants, unlike the urban municipalities whose public spending tend to be away from their desired profile. The municipalities also react to the reduction of the youngest, increasing public spending but in a significantly soften way than more urban municipalities.

Table 3 - Estimates of the factors contributing for the increase of the public expenditure per inhabitant in the shrinking municipalities of Alentejo.

	Coefficient	t-Statistic
young (-4)	-0,2138	-2,1024*
old (-2)	0,1954	1,1248**
employment (-1)	0,1479	2,2116*

Durbin-Watson stat	1,974
Adjusted R2	0,944
F-statistic	97,82
Sum squared resid	0,586

* Statistically significant a 1%, ** statistically significant at 5%

The number of employments increases the need for public spending in analogy to urban municipalities. Contrary to urban municipalities in which the evolution of the population is the main determinant of the composition of expenditure, the expenditure in the Alentejo weights more equally other factors.

According to Geys et al. [31] population decline affects small and large municipalities differently, but the effect is stronger for smaller municipalities. In the case of Alentejo and unlike most urban municipalities that try to reverse the shrinkage of population, the more rural municipalities of Alentejo appear to have accepted the process - Shrink Smart Strategy.

Table 4 shows how the public expenditures react, considering a set of 29 shrinking municipalities, managed by the local governments of the smallest municipalities of Alentejo, typically also the more rural ones.

The municipalities with the highest proportion of

elderly increased more spending prone to the elderly than the regional average – an elderly median voter. Moreover, the smaller municipalities are more reactive (respond within a shorter time) to increases in the number of the elderly than the regional average. An increase in the elderly of 1% has an impact of equal magnitude in public spending, exactly the opposite of the behavior of urban municipalities.

However, these municipalities react more than regional average to reduction in the number of the youngest, increasing public spending by 0.6% for each 1% reduction in the youngest, although to a lesser extent than in more urban municipalities.

Table 4 - Estimates of the factors contributing for the increase of the public expenditure per inhabitant in the shrinking municipalities of Alentejo with the smallest number of inhabitants.

	Coefficient	t-Statistic
young (-4)	-0,6170	-5,7169*
old (-1)	1,0026	3,2306*
employment (-1)	0,1413	2,5872*

Durbin-Watson stat	1,826
Adjusted R2	0,851
F-statistic	32,872
Sum squared resid	0,446

* Statistically significant a 1%

Table 5 shows the estimation results considering a set of the 28 municipalities with the highest proportion of the elderly. The number of the elderly affect public expenditures differently from the previous estimation, implying less pressure on public budget.This result is in accordance with the observations for Germany [31] because "public spending increases significantly with the number of elderly when the number of elderly is low, but is unaffected by it once the population over 65 becomes large".

Despite the existence of very interesting results when the analysis focuses on municipalities with high shrinkage of the Alentejo, are still signs of strength to face the inevitable shrinkage, leading to "unnecessary" public spending. For smaller municipalities the evolution of population is the main determinant of the composition of expenditure, being geared to the preferences of the elderly.

Table 5 - Estimates of the factors contributing for the increase of the public expenditure per inhabitant in the shrinking municipalities of Alentejo with the high proportion of the elderly.

	Coefficient	t-Statistic
young (-4)	-0,2071	-2,5254*
old (-2)	0,6388	3,7565*
employment (-1)	0,2306	4,1449*

Durbin-Watson stat	2,008
Adjusted R2	0,933
F-statistic	78,742
Sum squared resid	0,420

* Statistically significant a 1%

4. Final remarks

Lear to grow smaller is a difficult task for the local government of shrinking municipalities with cities of Portugal, feeling preferable to postpone the inevitable decline by any possible means. The general perception is that accept decline of inhabitants and the consequent loss of the municipal receipts is equivalent to accept a defeat. The present research helps to foresee that the reduction of the municipality inhabitants is not followed by the reduction in the public expenditure because the local governments resist in accepting the decline, even when this is a persistent phenomenon, insisting in strategies that aim to attract inhabitants. The rigidity of some costs, associated with the oversized provision of certain public services and infrastructures also contributes for the lack of adjustment of municipal expenditures. The decrease of inhabitants has implications for the budgetary health of the municipalities. The behaviour of rejecting shrinkage leads to spirals of persistent deficits. The current crisis of debt and the external intervention in Portugal, which imposes a cut of 350 million of Euros in the grants for the municipalities, between 2012 and 2013, will force municipalities to adapt to lower budgets and, consequently to cut wisely on the public expenditure.

Further research to evaluate the impact of the housing crisis in municipal budgets are also need, only possible to assess when statistics on Local Finance subsequent to 2010 become available, as well as the study of the impact of the contraction imposed by foreign aid, with effect from of 2012. Only with this

information, the results of bias in the composition of public expenditure in prone of youngest, in an attempt to reverse the process of abandonment of the residents can be reevaluated.

The expectation of governments is that future growth make downsizing in services and public infrastructure unnecessary. However, the inevitable coexistence of local governments with smaller budgets will determine, in the near future, a reassessment of their behavior in terms of the expenditure composition. As it stands, the level of public expenditure is not sustainable. The maintenance of competing strategies for a growing proportion of younger inhabitants has to be rethought, principally because the expected development of the age structure in Portugal is to enhance the inversion of the pyramid.

Our expectation is that local governments of the Portuguese shrinking municipalities with cities will realize that growth it is not the only way to see the future. More rural municipalities as those from Alentejo region began already to tackle with population decline. Growth can be more expensive and bring many new depths to the municipalities. Sustainable planning for less people with superior quality of life is a new way of planning. Local governments have to realize that should be saved money in infrastructure maintenance by preceding a downsizing in the services and public infrastructures as it already happens in many other European shrinking cities.

A change in approaching shrinking is necessity. In the new framework of persistently shrinking municipalities is necessary to provide better services to less. The focus should be to increase the quality of life of the remaining population with more nature and open spaces, making the municipalities more walkable and green [46, 47]. The message we want to finish with is that when a municipality is in a shrinking process it doesn't mean weakness, but it should be seen as an opportunity to increase the quality of life for the remaining citizens, making it a better place to live.

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