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A Social and Economic Development Index: NUTS Ranking in Portugal

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Abstract Once we accept the principle that development is a process which leads to changes in people's living conditions, regional development economists will always find it a challenge to try to define new ways of measuring the development level. The aim of this study is to calculate and to compare a Social and Economic Development Index (SEDI), regarding each *concelho* (NUTS IV) in Portugal. The SEDI is based on a set of variables– regarding demography, education, employment, entrepreneurial structure, health, and housing conditions – present in each *concelho*. From there it will move forward to seeking for homogeneity patterns between the various *concelhos*, with recourse to the clusters multivariate statistic method. Results point to there being clusters of *concelhos* highly differentiated, which suggests the need for a special care in setting up the spatial boundaries prior to its application to regional development policies and public management measures.

Keywords Social, Economic Development Index, Cluster Analysis, Public Management

1. Introduction

The aim of this study is, first of all, to present a new way of ranking Portuguese territorial units on the mainland, at the level of the *concelhos*[i], while making some considerations as to the position they occupy in what concerns social and economic development indicators. These will include variables other than those strictly related to economics. At a later stage, this study will be dealing with homogeneity relationships that might eventually exist among the different *concelhos* departing from a multivariate statistical model - the clusters – obtained in the course of a process of several stages which begin with a hierarchical method followed by a non-hierarchical one (K-means). Section 3 provides the methodological structure used in this study in order to facilitate the understanding of all the steps followed to achieve the aforementioned tasks.

Section 4, in turn, presents an analysis of the results obtained as well as a description of the social and economic development level of all the different *concelhos* contemplated in this study, while ranking them and pointing out the variables or sets of variables which establish a connection between their development level and all the aspects which might account for it. These aspects are alsodealt with in greater detail in section 5 as an attempt to obtaining the clusters.

This study ends with some final remarks and considerations regarding its own shortcomings at the same time that it sets some guidelines for future research.

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2. Socio-Economic Development

It is true that the concept of development implies a notion of futurity; it is also true that there can be no future without a clear knowledge of the past. From the beginning, any development process is associated with the idea of observing a certain situation which will be the starting point of that process. When subject to a deeper analysis, that idea will become the object of implementing a growth model closely linked with how it turns and changes into a quantitatively as well as qualitatively higher stage.

Although the actual *per capita* GDP is one of the indicators more frequently used to measure and compare economic growth/development processes, going on in different spatial areas, it has raised some severe criticism among researchers who have been pointing out its limited nature, especially because *per capita* GDP is but one of the many aspects of regional development. In its exclusive application this indicator ends up neglecting social aspects (such as access to education, health care and other living conditions) on the one hand, and other equally important variables that can be used to measure the economic performance of a given territory[1].

Since 1990, the United Nations Development Programme (UNDP) has been studying the recent history of human development evolution (especially after 1960) to the extent that it is primarily a process leading to each individual being able to widen the possibilities he or she is being given through accomplishing three major things: a long life, a good

health, and knowledge that will grant him or her access to all the necessary requirements for a suitable living standard.

The concept of human development, however, does not exhaust itself in achieving these goals; it involves other equally important dimensions – even if they are not easy to achieve – which have to do with political, economic, and social freedom, but also creativeness, productiveness, and respect for basic human rights. As such, it points to two main features which always go hand in hand: namely the enhancing of individual abilities and the way people put them to use, whether for productive or recreational or even political, cultural, and social purposes. The lack of balance between these two aspects concerning human development can lead to serious frustration[2].

Therefore, gender issues were introduced in 1995. Since then, attention has been given to how differences of opportunity between genders could alter the ranking of countries *vis-à-vis* their development level. Likewise, the degree of participation of women in societies' political and economic life has been taken into account. Ever since 1997 special attention has been given to human poverty and the countries' situation has been measured on the assumption that poverty statute changes depending on how high the development level is or whether it is still at an early stage. Finally, in 1999 the technological achievement index was calculated for the purpose of defining leading countries, potential leaders and dynamic followers of new technologies[3].

All these approaches focused on a country as a territorial unit and despite including several variables other than GIP *per* capita they do not reflect a wide range of valences when the territorial analysis reaches a more restrict level[4]. The value added of this study lies, on the one hand, on a territorial analysis of a more local nature and, on the other hand, on a wider range of variables (demographic, educational, health care, economic/entrepreneurial, environmental, and quality of life) making room for a better hierarchization of territorial units as far as their social and economic development level is concerned.

3. Methodology

The present study proposes a methodology which follows closely the one adopted by the UNDP in the Annual Report on Human Development in order to quantify social and economic development at a local level. It contemplates the integration of different dimensions (demographic, economic, social, and environmental) so that it can provide an integrated conceptual view on development.

The *status quo* model was the one chosen to systematize indicators. In fact, although it is usually assumed that development is best represented when different forms of indicators (pressure, *status quo* and answer)[ii], as well as the relationships between them, are analysed – only the former was taken into consideration, since the analysis in question concerns the status quo of development dynamics within the territory composed of the 278 *concelhos* in Mainland Portugal.

Table 1. SEDI Components[iii]

Level	Indicator		Description
DEMOGRAPHY	I1	Demographic Growth	Residing population variation – % between 1991 and 2001
	I2	Natural Demographic Growth	Natural growth rate – ‰ in 2002
	I3	Migrant Demographic Growth	Residing population according to migrations per residence *concelho* (in 99/12/31), per usual residence *concelho* in 2001/3/12 – Internal Migration Balance
	I4	Fecundity rate	Number of births per 1.000 fecund-age women (15-49 years of age) – 2002
EDUCATION	I5	Illiteracy	Illiteracy rate in % – 2001
	I6	Higher Education	Population over 18 years of age with an university degree - % in 2001
EMPLOYMENT	I7	Total Employment	Total employment rate– % in 2001
	I8	Total Unemployment	Total unemployment rate – % in 2001
	I9	Employment in non-primary sector	Population employed in the non-primary sector– % in 2001
	I10	Employees and Pensioners	Employed population per pensioner – 2001
ECONOMY	I11	Per head GNP	Per head GNP – 2001
	I12	Purchasing Power	Purchasing Power Index – 2004
ENTREPRENEURIAL SECTOR	I13	Entrepreneurial Structureiv	Entrepreneurial Index per *Concelho* – 2002
HEALTH	I14	Healthv	Health Index per *Concelho* – 2002
HOUSING	I15	Housing Conditionsvi	Housing Conditions Index per *Concelho* – 2001

Source: Own calculations

Bearing in mind both the aforementioned methodology and the data available for each *concelho*, the present SEDI is the result of 15 indicators representative of different development approaches (Table 1). Thus, as regards demography, four indicators were taken into consideration, which focus not only on the vitality but also on the human resources evolution dynamics taking place in each territory in terms of population growth - both natural and migrant - and fertility rates. At the education level we expect to measure the population's qualifications with recourse to illiteracy rates while determining what percentage of the population has a university degree. From there, we move to other issues regarding employment, economy and the entrepreneurial sector departing from the seven indicators which can give an important contribution to a better knowledge of the population's living conditions in terms of both work and income. At this stage, we try to outline not only the territory's entrepreneurial structure profile but also the profile of a whole set of basic issues for the survival of the populations and the preservation of their sense of belonging and social cohesion. Finally, health and housing reinforce the social component presented by this index, seeking not only to assess the existing facilities and their corresponding accessibilities which, to a certain extent, show the social impact of local, economic and, demographic constraints.

Besides the indicator housing conditions also contemplates the environmental aspect since three features of this variable are included in the compound indicator so that social and economic aspects likely to influence resources' and the territories' environmental quality can be measured such as water and residues.

Another methodological aspect described concerns the way data was treated. In this case we chose the benchmarking type analysis using reference values as the most and the least favourable situation, (*Ls* and *Li*, respectively). Thus, each indicator value calculated for each *concelho* undergoes a transformation according to the most or the least favourable value for the whole set of *concelhos* analysed. The result is a variation interval between zero and one. The reading of the values obtained gives room to understanding the relative position of each *concelho* compared to the one with the most favourable results, besides pointing to their inter- and intra-territorial cohesion levels.

The next step in our methodology was aggregating all the indexes. The same weighting [1] was given to each of the 15 indicators seeking, albeit subjectively, that the final index would reflect the authors' perception as to each indicator's relative weight on development. Thus, the value of each indicator is first transformed as follows:

$$(I1_{1,2,\ldots 278;}\ I2_{1,2\ldots 278;}\ \cdots,\ I15_{1,2\ldots,278}) = (X\text{-}Li)/(Ls\text{-}Li) \quad (1)$$

where,

(Ii: i=1,2,…,278) = the *concelho's* indicator index

X = the *concelho's* indicator

Li = the indicator's least favourable value

Ls = the indicator's most favourable value

Then the different indicators transformed are aggregated as follows:

$$SEDI = (_{i=1,\ldots,15}{}^{15}\Sigma I_i/15) \quad (2)$$

In order to be able to obtain clusters, namely hierarchical clusters, on a first approach we used both agglomerating and dividing techniques. According to these methods, the individuals- in this particular case the *concelhos* - are considered from the beginning as a cluster and later grouped according to their proximity or, on the contrary, allotted to a cluster and then divided into sub-groups depending on how distant they are from each other[11].

Several cluster connection methods have been tested using SPSS software in order to check whether they could produce similar results as suggested by Pestana and Gajeiro[12]. We were able to observe that the aggregation results obtained were very similar to those produced when using both Complete and Average Linkage(Within groups) methods. After using non-hierarchical K-means [2] method, we were able to establish that the results thus obtained very much resembled Complete Linkage's [3] and so we decided to choose it in order to compare these two types of methods.

4. Results and Discussion

Having described the methodology used to treat data concerning the variables chosen to deal with the various levels approached it was possible to calculate a social and economic development index – the SEDI – for each of the 278 *concelhos* in Mainland Portugal. Based on this index and on the values obtained for each *concelho*, we will first look at the hierarchical position of the *concelhos* explaining their development level by their place in the ranking in relation to the 15 indicators which compose the final index.

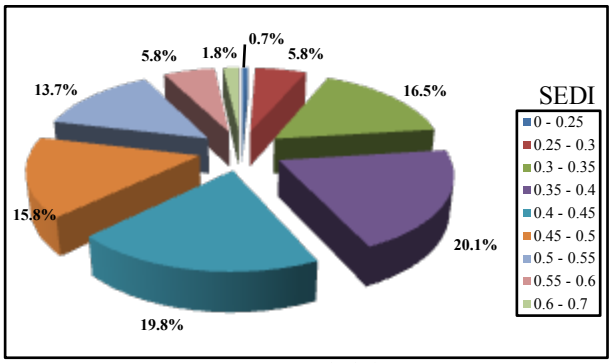
The SEDI presents a value oscillating between a little under ¼ and a maximum of approximately 2/3. The variation coefficient value is not significant since the standard deviation is about 20% of the mean value. The *concelho* of Vinhais shows the lowest index value (0.2364), which means it is only 24% short of having the worst results of all the indicators.Lisbon in turn occupies the top place in the ranking reaching a threshold of 0.6609, which, nevertheless, places this *concelho* 34 points short of reaching an optimal position. The SEDI concentration is at 40 points, moving less away from the worst position than from the most favourable one. (Annexe I, Table I.1)

[1] In this case the criterion adopted was the same used by the UNDP for the construction of the Human Development Index [13, 14].

[2] K-means is a non-hierarchical method which, as such, does not require a similitude/distance matrix calculation and is directly applied to the original data. It starts with the initial partition of individuals into a previously defined number of clusters and consists of transferring an individual to the cluster whose centre is nearer [15].

[3] The Complete Linkage criterion is a process by which the distance between two groups is defined as the distance between its most distant or least similar elements. The group is then described as a set of elements where each element resembles more all the other elements within the group than any of the other elements of the remaining groups [15].

The two *concelhos* with a SEDI below 0.25 (about 1%) - Vinhais and Mértola –, are both located in the hinterland and on the border with Spain. The 16 *concelhos* with a SEDI between 0.25 and 0.3, have in common the fact that they all lie several kilometres inland. And when the index goes up to 0.35, of the 46 *concelhos* in that interval (approximately 17% of the total under analysis), only Odemira lies on the coast, more precisely in Alentejo (Figure 1).



Source: Own calculations

Figure 1. Per cent Distribution of the *Concelhos* According to SEDI Levels

With the greatest number of *concelhos* (56 of the 278 under analysis), the development level between 0.35 and 0.4 includes only Alcácer do Sal, Grândola, Aljezur and Castro Marim, all of them in the south, namely on the coastal strip of Alentejo and Algarve. The remaining 52 *concelhos*, as we have already seen, are located further inland.

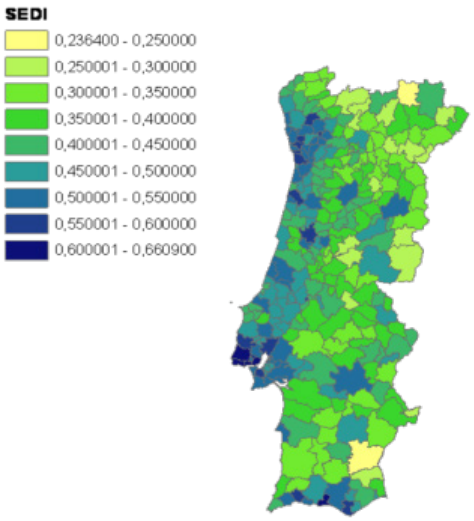
Once the analysis of the first half of the interval between SEDI maximum and minimum values has been completed it is important to point out again the most important feature observed so far and that is the fact that all the spaces lie away from the coast.

As we move over 0.05 up on the SEDI ranking, the *concelhos* on the coast start to show a slightly better performance. It is the case of Caminha in the north, Tavira and Vila do Bispo in the Algarve, and Santiago do Cacém in Alentejo. It should also be pointed out that the majority of the costal *concelhos* in this interval are located in the centre of the country (Lourinhã, Peniche, Óbidos, Nazaré, Pombal, Cantanhede, Mira and, Murtosa). The remaining 43 *concelhos* are all located in the interior of the country which remains the major space of this development level.

With a SEDI between 0.45 and 0.5, the coastal strip still has more *concelhos* north of the river Tagus than, for instances, the Algarve where only Olhão, Silves and Vila Real de Santo António have reached that score. Although the distribution in this development level is very similar in percentage terms to the distribution observed in the previous level, as far as coastal *concelhos* are concerned (about 20%), the great difference lies in the location of inland *concelhos* since their performance as regards this development level, is beginning to be closer to the former's.

That is even more striking when we move 5 points up in the SEDI; then the coastal *concelhos* and the ones located in adjoining areas achieve the best performance for the first time. Yet it is possible to find in the same development threshold such *concelhos* as Viseu, Guarda and Évora, where there is a strong urban concentration despite their being far away from the coast. If to this axis we add other inland cities with slightly lower SEDI, we may conclude that these territories play an important role in polycentric development defined as a regional development policy by the EU[16].

Finally, the country's two main urban centres can be found in SEDI'S two last levels. With an index between 0.55 and 0.6 we have those *concelhos* which include the cities of Aveiro, Braga, Coimbra, Faro, and Porto, as well as other territorial units belonging to Lisbon and O'Porto metropolitan areas, such as Odivelas, Seixal, and Vila Franca de Xira, (belonging to the former) and Maia, and Vila Nova de Gaia (belonging to the latter). At the SEDI top level we find the *concelhos* in Lisbon metropolitan area and Albufeira, in the Algarve, which is an exception (Map 1).



Source: Own calculations

Map 1. SEDI for the *Concelhos* of Mainland Portugal

In order to complete our first analysis of how the *concelhos* position themselves regarding SEDI we will look in detail at the 15 indicators which served as the basis of our compound index. As mentioned before, these have to do with variables grouped according to several levels: Demography; Education; Employment; Economy; Entrepreneurial Sector; Health; Housing.

Starting with demography, it seems that a little over half of the *concelhos* in Mainland Portugal register a negative demographic growth, especially in the hinterland territorial units near or on the border. In turn, the areas with a higher population growth are located on the coast, namely in Lisbon and O'Porto metropolitan areas and in some *concelhos* of the Algarve. As if contradicting the idea that inland areas are becoming depopulated, the *concelhos* of Vila Real, Viseu, and Guarda register positive demographic growth rates, which reinforce the aforementioned polycentrism.

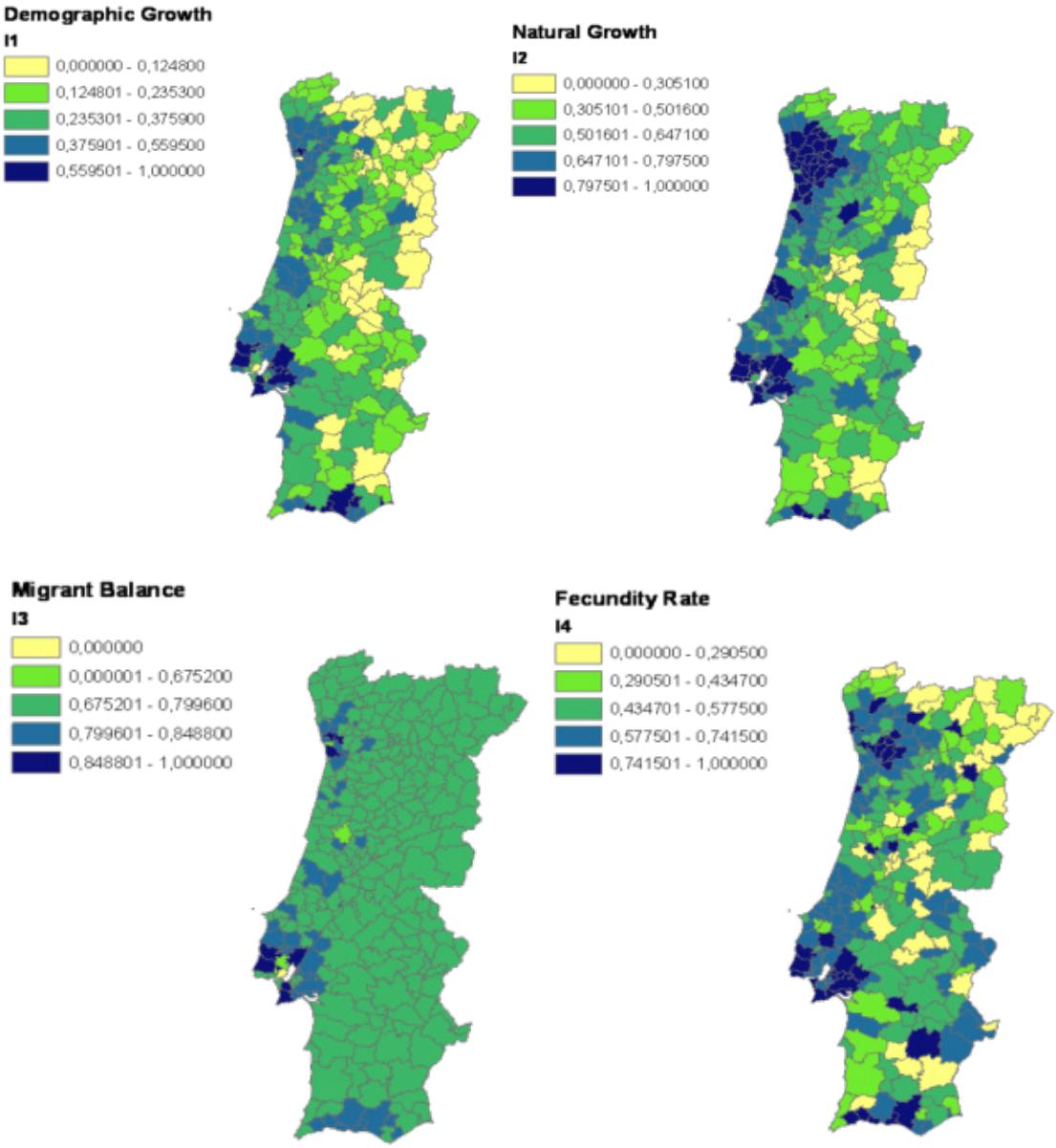
Natural growth is a phenomenon more likely to occur in the north than in the south for a number of reasons but mainly due to the positive contribution of that half of the

country lying to the north and closer to the coast. Similarly to what happens with demographic growth, generally speaking, in the inland regions near the border natural growth rates are relatively lower.

The migrant balance indicates that the two big metropolitan areas, with the exception of their respective main cities, Lisbon and O'Porto, do indeed attract more people. Likewise, the Algarve as well as some *concelhos* on the coast in central Portugal register some very positive values as concerns this issue (Map 2).

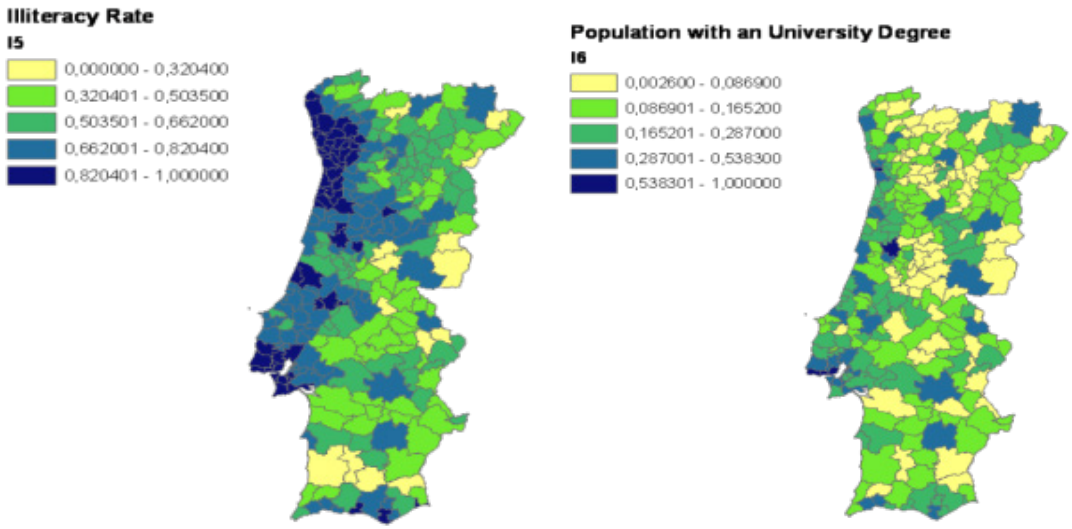
In what concerns education and based on the two indicators chosen – Illiteracy and Higher Education – it may be said that the former has a more even distribution all over the country, although there are still some serious problems in the south, namely in BaixoAlentejo. On the other hand, the biggest contribution to SEDI in terms of the Population with an University Degree Indicator definitely comes from those *concelhos* where there are universities and polytechnic schools (Map 3).

Total employment rate gives a positive contribution to SEDI in most of the coastal strip areas, with the exception of some *concelhos* to the north, like Mira, Figueira da Foz, Cantanhede, Murtosa, and Pombal in the central region and some in the Algarve and Alentejo coastal strip. Central Alentejo also shows very positive values. The unemployment rate is particularly high in Alentejo, a predicament confirmed by the weight the number of pensioners has in the whole of the hinterland from the north to the south and in the whole of the Alentejo (Map 4).



Source: Own Calculations

Map 2. Demography



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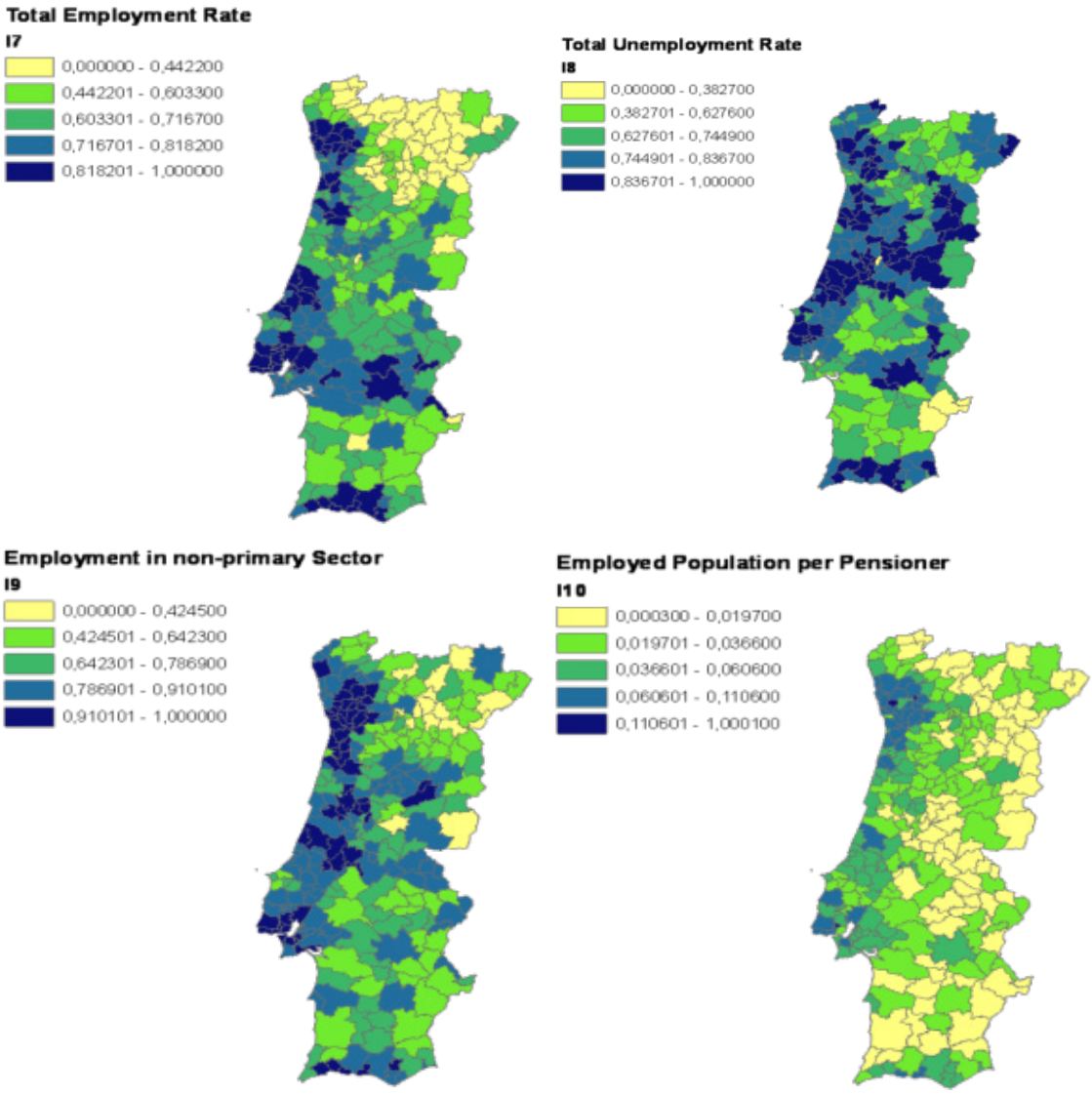
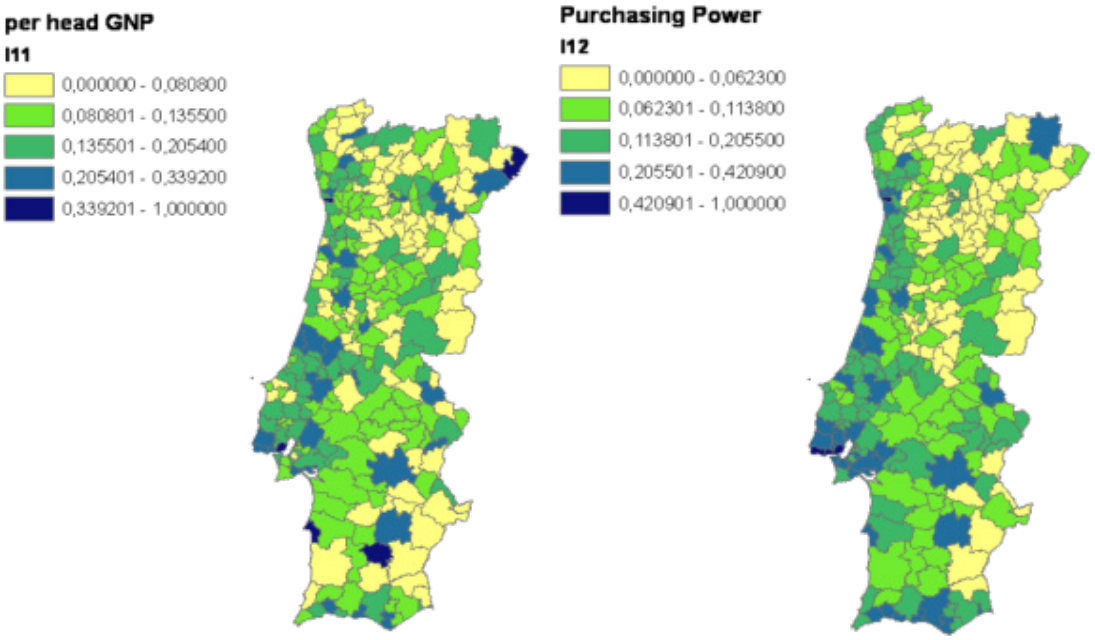
Map 3. Education



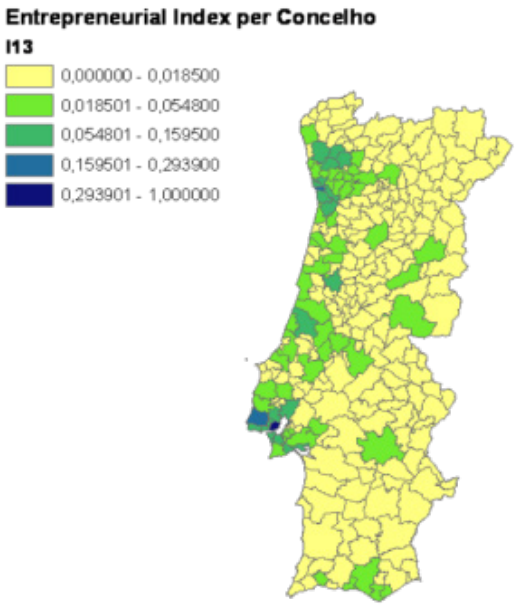
Source: Own Calculations

Map 4. Employment

A look at the per head GNP indicator explains how the economy is concentrated in Lisbon and O'Porto metropolitan areas. There are, however, a few exceptions. Miranda doDouro, and Castro Verde, in the interior of the country, are among the *concelhos* with the best performance concerning this indicator. Responsible for this excellent performance are, no doubt, the dams and the production of electrical power in the former and the mining industry in the latter. It is also worth mentioning the fact that petrochemical industry is based on the *concelho* of Sines, in the Alentejo coastal strip, which makes this indicator so interesting and contributes in a very positive way to its respective SEDI. Once again, almost the whole of the hinterland, especially the regions near the border, reach low levels regarding this indicator. Likewise, the Purchasing Power is stronger in the above mentioned metropolitan areas as well as in the Algarve. As a consequence of the tertiarization of their economies and the presence there of some universities, Bragança, Portalegre, Évora, and Beja in the hinterland present quite interesting living standards (Map 5).



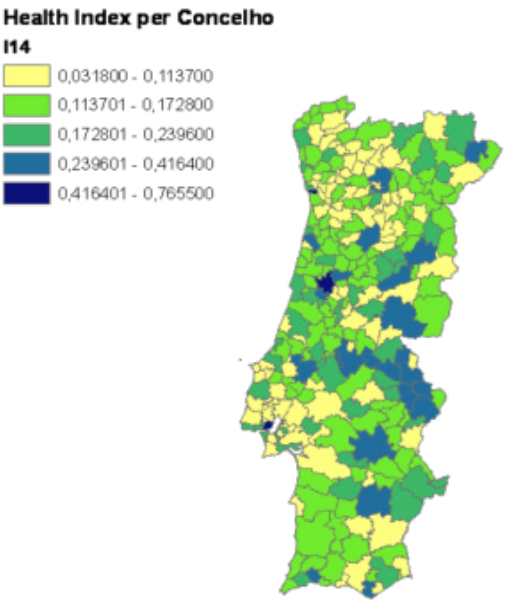
Source: Own Calculations
Map 5. Economy



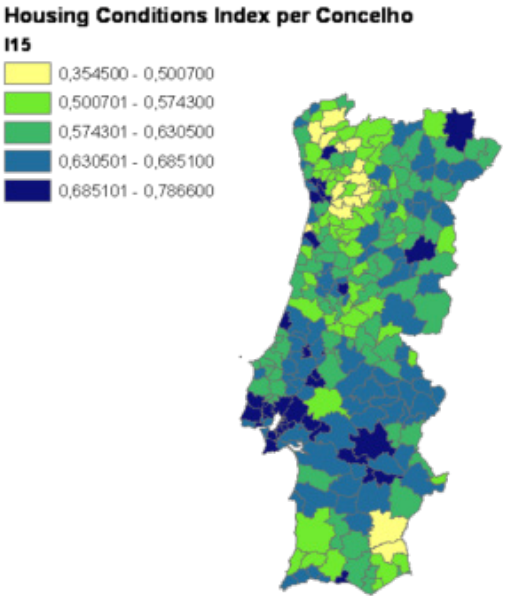
Source: Own Calculations
Map 6. Entrepreneurial Sector

The entrepreneurial index per *concelho*, which includes four indicators: a) Business firms based on the region; b) Partnerships based on the region; c) Personnel working in partnerships based on the region; and, d) turnover of partnerships based on the region, again points to a stronger concentration of economic activity in O'Porto and Lisbon metropolitan areas. These two areas along with Leiria region, the Algarve coastal strip, and some urban centres in the interior of the country emphasize the rest of the country's lack of entrepreneurship (Map 6).

When we look at the health indicator we come upon some very interesting conclusions. The *concelhos* in O'Porto and Lisbon metropolitan areas located around these two cities present several weaknesses and this is a situation which also occurs in the Algarve and in the vicinity of Coimbra. The regions along the border, with the exception of Vimioso in the north, Castelo Branco in the centre, and the boarder *concelhos* of Alto Alentejo in the south, have considerable needs when it comes to infrastructure, equipment and human capital (Map 7).



Source: Own Calculations
Map 7. Health



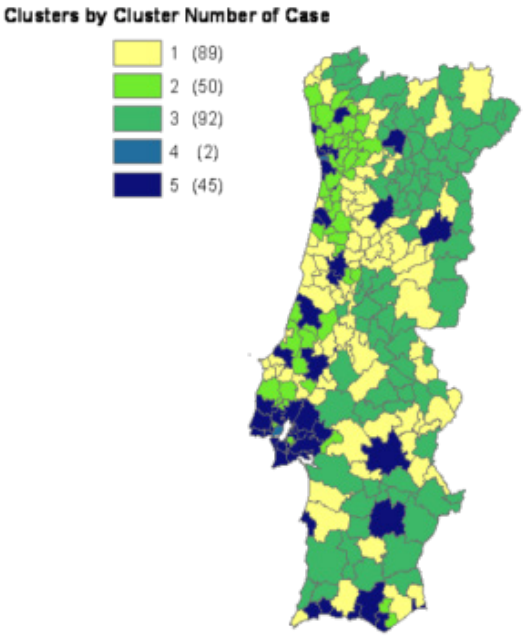
Source: Own Calculations
Map 8. Housing

Finally, the analysis of the housing conditions shows that the *concelhos* situated in the interior north and not very far from the coast have more weaknesses than the ones further inland, with the exception of Mértola, and Alcoutim, in BaixoAlentejo, and Algarve, respectively. The latter actually face great difficulties as regards housing conditions. Although living conditions are much better in both metropolitan areas, it is already possible to enjoy some good conditions in terms of comfort in several *concelhos* of the interior of the country (Map 8).

5. Cluster Analysis

In order to be able to analyse the SEDI'S several components we tried to group the *concelhos* into clusters, which as described by López[17] is a multivariate statistic method whose main object is "… revelarconcentraciones en los datosparasuagrupamientoeficiente en clusters (o conglomerados) segúnsuhomogeneidad"[vii].

As it was already mentioned in section 2, our first intention was to obtain hierarchical clusters. Based on our findings we concluded that aggregation results were very similar whether we used the Complete or the Average Linkage (Within groups) method.



Source: Own Calculations

Map 9. The *concelhos* grouped into clusters (K-means)

Table 2. Summary of variable descriptive statistics per cluster

Variable	Cluster	N	Mean	Std. Deviation	Std. Error	95% Conf Int. f. Mean		Minimum	Maximum
						Lower B.	Upper B.		
I1	1	89	0,257	0,071	0,008	0,242	0,272	0,077	0,484
I2	1	89	0,59	0,082	0,009	0,573	0,607	0,372	0,779
I3	1	89	0,790	0,006	0,001	0,789	0,791	0,773	0,806
I4	1	89	0,511	0,146	0,016	0,481	0,542	0,240	1,000
I5	1	89	0,657	0,111	0,012	0,634	0,681	0,401	0,880
I6	1	89	0,151	0,073	0,008	0,136	0,166	0,019	0,418
I7	1	89	0,662	0,112	0,012	0,638	0,686	0,325	0,888
I8	1	89	0,782	0,092	0,010	0,763	0,802	0,520	0,959
I9	1	89	0,786	0,101	0,011	0,765	0,807	0,550	0,964
I10	1	89	0,028	0,008	0,001	0,027	0,030	0,010	0,059
I11	1	89	0,118	0,081	0,009	0,101	0,135	0,000	0,746
I12	1	89	0,109	0,048	0,005	0,099	0,119	0,000	0,242
I13	1	89	0,009	0,007	0,001	0,008	0,011	0,001	0,039
I14	1	89	0,159	0,058	0,006	0,147	0,171	0,072	0,376
I15	1	89	0,605	0,068	0,007	0,590	0,619	0,354	0,742

I1	2	50	0,431	0,082	0,012	0,408	0,454	0,316	0,752
I2	2	50	0,813	0,105	0,015	0,783	‘,843	0,558	1,000
I3	2	50	0,801	0,018	0,003	\0,796	0,806	0,766	0,864
I4	2	50	0,657	0,120	0,017	0,623	0,691	0,395	0,892
I5	2	50	0,821	0,070	0,010	0,802	0,841	0,673	0,951
I6	2	50	0,166	0,070	0,010	0,146	0,186	0,045	0,346
I7	2	50	0,805	0,106	0,015	0,775	0,835	0,564	1,000
I8	2	50	0,853	0,078	0,011	0,831	0,875	0,582	1,000
I9	2	50	0,915	0,058	0,008	0,899	0,932	0,750	0,999
I10	2	50	0,100	0,187	0,026	0,046	0,153	0,025	1,000
I11	2	50	0,135	0,048	0,007	0,121	0,148	0,050	0,237
I12	2	50	0,124	0,047	0,007	0,110	0,137	0,041	0,287
I13	2	50	0,029	0,023	0,003	0,022	0,035	0,004	0,094
I14	2	50	0,113	0,039	0,006	0,101	0,124	0,058	0,239
I15	2	50	0,595	0,068	0,010	0,576	0,615	0,474	0,719
I1	3	92	0,134	0,068	0,007	0,120	0,148	0,000	0,354
I2	3	92	0,421	0,150	0,016	0,390	0,452	0,000	0,720
I3	3	92	0,788	0,002	0,000	0,788	0,789	0,782	0,794
I4	3	92	0,387	0,177	0,018	0,350	0,424	0,000	0,801
I5	3	92	0,452	0,133	0,014	0,425	0,480	0,000	0,669
I6	3	92	0,083	0,038	0,004	0,075	0,091	0,003	0,199
I7	3	92	0,488	0,157	0,016	0,455	0,521	0,000	0,770
I8	3	92	0,687	0,158	0,016	0,654	0,719	0,000	0,959
I9	3	92	0,577	0,165	0,017	0,543	0,612	0,000	0,952
I10	3	92	0,014	0,007	0,001	0,013	0,016	0,000	0,031
I11	3	92	0,089	0,069	0,007	0,074	0,103	0,008	0,503
I12	3	92	0,058	0,027	0,003	0,052	0,063	0,001	0,147
I13	3	92	0,003	0,002	0,000	0,002	0,003	0,000	0,013
I14	3	92	0,139	0,059	0,006	0,127	0,151	0,032	0,416
I15	3	92	0,594	0,057	0,006	0,583	0,606	0,433	0,704
I1	4	2	0,074	0,019	0,014	-0,099	0,247	0,060	0,088
I2	4	2	0,624	0,033	0,024	0,324	0,923	0,600	0,647
I3	4	2	0,207	0,292	0,207	-2,418	2,832	0,000	0,413
I4	4	2	0,600	0,156	0,110	-0,800	2,000	0,490	0,710
I5	4	2	0,940	0,030	0,021	0,672	1,209	0,919	0,961
I6	4	2	0,848	0,103	0,073	-0,073	1,770	0,776	0,921
I7	4	2	0,761	0,100	0,071	-0,135	1,658	0,691	0,832
I8	4	2	0,679	0,101	0,071	-0,229	1,586	0,607	0,750
I9	4	2	0,997	0,002	0,001	0,983	1,012	0,996	0,999
I10	4	2	0,030	0,007	0,005	-0,029	0,089	0,025	0,034
I11	4	2	0,654	0,204	0,145	-1,184	2,491	0,509	0,798
I12	4	2	0,832	0,238	0,168	-1,306	2,969	0,664	1,000
I13	4	2	0,647	0,499	0,353	-3,839	5,133	0,294	1,000
I14	4	2	0,677	0,035	0,025	0,361	0,994	0,652	0,702
I15	4	2	0,654	0,007	0,005	0,594	0,713	0,649	0,658
I1	5	45	0,498	0,167	0,025	0,448	0,548	0,161	1,000
I2	5	45	0,814	0,087	0,013	0,788	0,840	0,629	0,983
I3	5	45	0,806	0,062	0,009	0,787	0,825	0,654	1,000
I4	5	45	0,722	0,134	0,020	0,682	0,762	0,414	0,997
I5	5	45	0,864	0,087	0,013	0,838	0,890	0,676	1,000
I6	5	45	0,389	0,158	0,024	0,341	0,437	0,187	1,000
I7	5	45	0,817	0,085	0,013	0,791	0,842	0,575	0,990
I8	5	45	0,771	0,073	0,011	0,749	0,793	0,607	0,939
I9	5	45	0,935	0,057	0,008	0,918	0,953	0,812	1,000
I10	5	45	0,059	0,017	0,003	0,054	0,065	0,028	0,106
I11	5	45	0,223	0,141	0,021	0,181	0,265	0,105	1,000
I12	5	45	0,273	0,091	0,014	0,246	0,300	0,145	0,589
I13	5	45	0,055	0,048	0,007	0,041	0,070	0,006	0,215
I14	5	45	0,200	0,118	0,018	0,164	0,235	0,078	0,765
I15	5	45	0,684	0,044	0,007	0,670	0,697	0,599	0,787

Since the non-hierarchical K-means method implies establishing a number of clusters right from the onset, we decided to make a previous analysis using Complete Linkage to establish that number. The criteria applied were the distance between clusters and the R-square. The distance criterion showed that we could retain 5 to 10 clusters for it is when the slope of the straight line uniting the distance between two clusters is bigger. When to this analysis we added the R-square criterion we observed that the 5 cluster solution retains 75,9 % of the total variability. In terms of

getting a minimum number of clusters, the 5 cluster solution seems to us the eligible one since, from the beginning, it retains a significant percentage of the total variability.

In table II.1 of the annexe we produce the results obtained through non-hierarchical K-means method. K-means will serve as the basis of our analysis for, in general, non-hierarchical methods provide a more accurate classification of the subjects. Map 9 and Table 2 show the clusters obtained through this method, namely their geographical distribution and the variable descriptive statistics.

The variance analysis presented in annexe II.5 allowed us to identify those variables leading to a division per cluster as well as their relative importance.[viii] .This way it was possible to establish that I12 (Purchasing Power) is the variable which contributes most to cluster division followed by I3 (Migrant Demographic Growth), and I13 (Entrepreneurial Structure), I5 (Illiteracy), I1 (Demographic Growth), I2 (Natural Demographic Growth), I6 (Higher Education) and I9 (Employment in the Non-primary Sector), and also by I7 (Total Employment), I4 (Fecundity Rate), I14 (Health), and I11 (per head GNP); and finally by I15 (Housing Conditions), I8 (Total Unemployment), and I10 (Employees and Pensioners).

When we cross-reference this information with the one in Table 2 consisting of a summary of variable descriptive statistics per cluster, mean statistic tests[ix] and the map previously produced, the following may be observed:

Cluster 4, composed of the cities of Lisbon and O'Porto dominates regarding such indicators as Purchasing Power (I12), Entrepreneurial Structure Dynamism, (I13), Population with an University Degree (I6), Health Indicators (I14), and Per Head GNP (I11), immediately followed by cluster 5 - which includes, among others, the most important urban nuclei - in relation to the same indicators.

Cluster 4 also has the lowest migrant demographic growth (I3), andcluster 5 the highest demographic growth (I1).

Cluster 3 is representative of the great majority of the inland *concelhos* and it is different from the rest for its low level of employment and high illiteracy rate which reflect themselves on I7 and I5; it also has the lowest level of both population with an university degree (I6) and of purchasing power (I12).

Cluster 2, including a set of *concelhos* near the coast stands out, among other reasons, for its positive behaviour in such aspects as unemployment and demographic growth with a repercussion on I8 and I1, a relative entrepreneurial dynamism (I13), only overcome by clusters 4 and 5, and for a rather favourable employed population per pensioner ratio (I10).

Finally, cluster 1, including 89 *concelhos* spreading throughout the territory, with a relative concentration in the centre occupies an intermediate position in relation to most of the indicators.

The intrinsic homogeneities of each cluster as well as the inter-cluster differences found are the result of not only the social and economic specificities already existing in each cluster but also of regional development policies implemented in Portugal after the country has joined the European Union. These policies increased the importance of coastal towns against rural areas and the hinterland which may be observed in the dichotomies between clusters 4 and 5 *versus* 1 and 3.

6. Final Remarks and Policy / Managerial Implications

The use of cluster techniques to analyse the several indicators which compose the SEDI in each *concelho* only stressed the notion that the *concelhos*on the coast and the ones in the interior of the country, separated by an intermediate central zone, have different characteristics and that the same situation occurs when we look at the group of *concelhos* which include the main towns and the *concelhos* around themand the one formed by the two big cities, Lisbon and O'Porto.

The simple exercise of overlapping the NUT III regions map and the map of the *concelhos* produced would clearly show the great asymmetries in terms of development within each NUT III. These asymmetries would be even bigger if we were to overlap the NUT III regions map with the map of the territory regarding NUT II. We believe these considerations to be particularly important for the definition of new development instruments and policies insofar as the ones existing are traditionally conceived and targeted to a much too wide territorial aggregation level to be able to cope with each territorial unit's weaknesses and specificities and, therefore, compromising its efficiency and effectiveness.

These results also suggest some public management measures regarding such aspects as land use and organization and public budgeting which are essential in terms of development if a larger territorial cohesion is to be attained. We refer naturally to such measures likely to increase the literacy level, to fight the depopulation of the hinterland as well as increasing entrepreneurial attractiveness, namely by investing in schools, in the continuous training of teaching agents and in other communication infra-structures. This may be achieved with recourse to tax incentives that may help high skilled human resources settle all over the country and attract private investment in a diversified entrepreneurial tissue.

In short, centralized management of regional development policies has been one of the main obstacles to a more equal distribution of resources that might lead to equal opportunities in territorial development. It is important to point out that this study was carried out through calculating indicators that referred to the total area of Mainland Portugal. Recalculating these values based on a smaller territorial unit like NUT II and NUT III will certainly be a useful topic to pursue in further research.

ANNEX I

Table I.1. Per cent distribution of the *Concelhos* according to SEDI levels

SEDI	*Concelhos*	No	%
[0 – 0,25[	Mértola; Vinhais.	2	0,7
[0,25 – 0,3[	Aguiar da Beira; Alcoutim; Barrancos; Boticas; Carrazeda de Ansiães; Freixo de Espada à Cinta; Gavião; Idanha-a-Nova; Montalegre; Oleiros; Pampilhosa da Serra; Penamacor; Ribeira de Pena; Torre de Moncorvo; Valpaços; Vimioso.	16	5,8
[0,3 – 0,35[	Alandroal; Alfândega da Fé; Alijó; Aljustrel; Almeida; Almodôvar; Arcos de Valdevez; Armamar; Avis; Castanheira de Pêra; Castro Daire; Coruche; Cuba; Ferreira do Alentejo; Figueira de Castelo Rodrigo; Fornos de Algodres; Fronteira; Melgaço; Mesão Frio; Mogadouro; Monção; Monchique; Mondim de Basto; Mora; Murça; Odemira; Ourique; Paredes de Coura; Pedrógão Grande; Penedono; Portel; Proença-a-Nova; Resende; Sabrosa; Sabugal; São João da Pesqueira; Sernancelhe; Serpa; Tabuaço; Tarouca; Terras de Bouro; Trancoso; Vila Flor; Vila Nova de Foz Côa; Vila Pouca de Aguiar; Vila Velha de Ródão.	46	16,5
[0,35 – 0,4[	Alcácer do Sal; Aljezur; Alpiarça; Alter do Chão; Alvaiázere; Alvito; Arganil; Arraiolos; Arronches; Baião; Cadaval; Castro Marim; Celorico da Beira; Celorico de Basto; Chamusca; Cinfães; Crato; Ferreira do Zêzere; Figueiró dos Vinhos; Góis; Gouveia; Grândola; Mação; Macedo de Cavaleiros; Marvão; Meda; Miranda do Douro; Mirandela; Moimenta da Beira; Monforte; Montemor-o-Velho; Mortágua; Moura; Mourão; Nisa; Penalva do Castelo; Pinhel; Ponte da Barca; Ponte de Sor; Redondo; Salvaterra de Magos; Santa Comba Dão; Santa Marta de Penaguião; São Pedro do Sul; Sardoal; Sátão; Seia; Sertã; Soure; Sousel; Tondela; Vidigueira; Vieira do Minho; Vila de Rei; Vila Nova de Paiva; Vouzela.	56	20,1
[0,4 – 0,45[	Abrantes; Almeirim; Amarante; Amares; Ansião; Arouca; Belmonte; Bombarral; Borba; Bragança; Cabeceiras de Basto; Caminha; Campo Maior; Cantanhede; Carregal do Sal; Castelo de Paiva; Castelo de Vide; Castro Verde; Chaves; Elvas; Estremoz; Fundão; Golegã; Lamego; Lourinhã; Mangualde; Manteigas; Mira; Montemor-o-Novo; Murtosa; Nazaré; Nelas; Óbidos; Oliveira de Frades; Oliveira do Hospital; Penacova; Penela; Peniche; Peso da Régua; Pombal; Ponte de Lima; Póvoa de Lanhoso; Reguengos de Monsaraz; Santiago do Cacém; Sever do Vouga; Tábua; Tavira; Tomar; Vale de Cambra; Valença; Vila do Bispo; Vila Nova da Barquinha; Vila Nova de Cerveira; Vila Nova de Poiares; Vila Verde.	55	19,8
[0,45 – 0,5[	Albergaria-a-Velha; Alcanena; Alcobaça; Anadia; Arruda dos Vinhos; Azambuja; Barcelos; Barreiro; Beja; Cartaxo; Castelo Branco; Constância; Covilhã; Espinho; Estarreja; Fafe; Figueira da Foz; Marco de Canaveses; Mealhada; Miranda do Corvo; Moita; Montijo; Olhão; Oliveira de Azeméis; Oliveira do Bairro; Ourém; Penafiel; Portalegre; Porto de Mós; Rio Maior; Santarém; Santo Tirso; São Brás de Alportel; Silves; Sobral de Monte Agraço; Torres Novas; Torres Vedras; Vagos; Vendas Novas; Viana do Alentejo; Viana do Castelo; Vila Real; Vila Real de Santo António; Vila Viçosa.	44	15,8
[0,5 – 0,55[	Águeda; Alcochete; Alenquer; Almada; Amadora; Batalha; Benavente; Caldas da Rainha; Condeixa-a-Nova; Esposende; Évora; Felgueiras; Gondomar; Guarda; Guimarães; Ílhavo; Lagoa; Lagos; Leiria; Loulé; Loures; Lousã; Lousada; Marinha Grande; Matosinhos; Ovar; Paços de Ferreira; Palmela; Paredes; Póvoa do Varzim; Santa Maria da Feira; Sesimbra; Setúbal; Sines; Valongo; Vila do Conde; Vila Nova de Famalicão; Viseu.	38	13,7
[0,55 – 0,6[	Aveiro; Braga; Coimbra; Entroncamento; Faro; Mafra; Maia; Odivelas; Portimão; Porto; São João da Madeira; Seixal; Trofa; Vila Franca de Xira; Vila Nova de Gaia; Vizela.	16	5,8
[0,6 – 0,7]	Albufeira; Cascais; Lisboa; Oeiras; Sintra.	5	1,8
Total		278	100

ANNEX II – Cluster Analysis (K-means)

II.1. Cluster Membership

N	*Concelho*	Cluster	N	*Concelho*	Cluster	N	*Concelho*	Cluster
2	Caminha	1	122	Ansião	1	183	Tomar	1
7	Ponte de Lima	1	124	Figueiró dos Vinhos	1	184	Torres Novas	1
8	Valença	1	127	Carregal do Sal	1	185	Vila Nova da Barquinha	1
10	Vila Nova de Cerveira	1	129	Mangualde	1	207	Grândola	1
20	Vieira do Minho	1	130	Mortágua	1	208	Santiago do Cacém	1
35	Cabeceiras de Basto	1	131	Nelas	1	214	Campo Maior	1
36	Celorico de Basto	1	132	Oliveira de Frades	1	215	Castelo de Vide	1
38	Baião	1	134	Santa CombaDão	1	217	Elvas	1
47	Cinfães	1	135	São Pedro do Sul	1	223	Ponte de Sor	1
49	Arouca	1	137	Tondela	1	224	Portalegre	1
53	Vale de Cambra	1	140	Vouzela	1	226	Arraiolos	1
61	Peso da Régua	1	148	Seia	1	227	Borba	1
66	Lamego	1	150	Celorico da Beira	1	228	Estremoz	1
74	Bragança	1	153	Manteigas	1	230	Montemor-o-Novo	1
77	Mirandela	1	155	Pinhel	1	231	Mourão	1
82	Chaves	1	158	Castelo Branco	1	233	Redondo	1
94	Murtosa	1	162	Belmonte	1	234	Reguengos de Monsaraz	1
97	Sever do Vouga	1	163	Covilhã	1	236	Viana do Alentejo	1
99	Cantanhede	1	164	Fundão	1	237	Vila Viçosa	1
102	Figueira da Foz	1	166	Bombarral	1	244	Castro Verde	1
103	Mira	1	168	Nazaré	1	252	Azambuja	1
104	Montemor-o-Velho	1	169	Óbidos	1	253	Almeirim	1
105	Penacova	1	170	Peniche	1	254	Alpiarça	1
106	Soure	1	173	Cadaval	1	259	Golegã	1
110	Pombal	1	174	Lourinhã	1	261	Salvaterra de Magos	1
112	Arganil	1	177	Abrantes	1	266	Castro Marim	1
116	Oliveira do Hospital	1	178	Alcanena	1	275	Silves	1
118	Penela	1	179	Constância	1	276	Tavira	1
119	Tábua	1	181	Ferreira do Zêzere	1	277	Vila do Bispo	1
120	Vila Nova de Poiares	1	182	Sardoal	1		Number of cases	89

N	*Concelho*	Cluster	N	*Concelho*	Cluster	N	*Concelho*	Cluster
9	Viana do Castelo	2	40	Lousada	2	111	Porto de Mós	2
11	Amares	2	41	Marco de Canaveses	2	114	Lousã	2
12	Barcelos	2	42	Paços de Ferreira	2	115	Miranda do Corvo	2
14	Esposende	2	43	Paredes	2	165	Alcobaça	2
16	Vila Verde	2	44	Penafiel	2	171	Alenquer	2
17	Fafe	2	50	Santa Maria da Feira	2	172	Arruda dos Vinhos	2
18	Guimarães	2	51	Oliveira de Azeméis	2	175	Sobral de Monte Agraço	2
19	Póvoa de Lanhoso	2	87	Águeda	2	176	Torres Vedras	2
21	Vila Nova de Famalicão	2	88	Albergaria-a-Velha	2	186	Ourém	2
22	Vizela	2	89	Anadia	2	194	Odivelas	2
23	Santo Tirso	2	91	Estarreja	2	199	Moita	2
24	Trofa	2	93	Mealhada	2	235	VendasNovas	2
26	Gondomar	2	95	Oliveira do Bairro	2	256	Cartaxo	2
32	Vila do Conde	2	96	Ovar	2	260	Rio Maior	2
34	Castelo de Paiva	2	98	Vagos	2	272	Olhão	2
37	Amarante	2	107	Batalha	2	274	São Brás de Alportel	2
39	Felgueiras	2	109	Marinha Grande	2		Number of cases	50

N	*Concelho*	Cluster	N	*Concelho*	Cluster	N	*Concelho*	Cluster
1	Arcos de Valdevez	3	81	Boticas	3	206	Alcácer do Sal	3
3	Melgaço	3	83	Montalegre	3	210	Mora	3
4	Monção	3	84	Murça	3	211	Alter do Chão	3
5	Paredes de Coura	3	85	Valpaços	3	212	Arronches	3
6	Ponte da Barca	3	86	Vila Pouca de Aguiar	3	213	Avis	3
15	Terras de Bouro	3	113	Góis	3	216	Crato	3
45	Mondim de Basto	3	117	Pampilhosa da Serra	3	218	Fronteira	3
46	Ribeira de Pena	3	121	Alvaiázere	3	219	Gavião	3
48	Resende	3	123	Castanheira de Pêra	3	220	Marvão	3
54	Carrazeda de Ansiães	3	125	Pedrógão Grande	3	221	Monforte	3
55	Freixo de Espada à Cinta	3	126	Aguiar da Beira	3	222	Nisa	3
56	Torre de Moncorvo	3	128	Castro Daire	3	225	Alandroal	3
57	Vila Flor	3	133	Penalva do Castelo	3	232	Portel	3
58	Vila Nova de Foz Côa	3	136	Sátão	3	238	Sousel	3
59	Alijó	3	138	Vila Nova de Paiva	3	239	Aljustrel	3
60	MesãoFrio	3	141	Oleiros	3	240	Almodôvar	3
62	Sabrosa	3	142	Proença-a-Nova	3	241	Alvito	3
63	Santa Marta de Penaguião	3	143	Sertã	3	242	Barrancos	3
65	Armamar	3	144	Vila de Rei	3	245	Cuba	3
67	Moimenta da Beira	3	145	Mação	3	246	Ferreira do Alentejo	3
68	Penedono	3	146	Fornos de Algodres	3	247	Mértola	3
69	São João da Pesqueira	3	147	Gouveia	3	248	Moura	3
70	Sernancelhe	3	149	Almeida	3	249	Ourique	3
71	Tabuaço	3	151	Figueira de Castelo Rodrigo	3	250	Serpa	3
72	Tarouca	3	154	Meda	3	251	Vidigueira	3
73	Alfândega da Fé	3	156	Sabugal	3	257	Chamusca	3
75	Macedo de Cavaleiros	3	157	Trancoso	3	258	Coruche	3
76	Miranda do Douro	3	159	Idanha-a-Nova	3	264	Alcoutim	3
78	Mogadouro	3	160	Penamacor	3	265	Aljezur	3
79	Vimioso	3	161	Vila Velha de Ródão	3	271	Monchique	3
80	Vinhais	3	205	Odemira	3		Number of cases	92

N	*Concelho*	Cluster	N	*Concelho*	Cluster	N	*Concelho*	Cluster
13	Braga	5	152	Guarda	5	202	Seixal	5
25	Espinho	5	167	Caldas da Rainha	5	203	Sesimbra	5
27	Maia	5	180	Entroncamento	5	204	Setúbal	5
28	Matosinhos	5	187	Cascais	5	209	Sines	5
30	Póvoa de Varzim	5	189	Loures	5	229	Évora	5
31	Valongo	5	190	Oeiras	5	243	Beja	5
33	Vila Nova de Gaia	5	191	Sintra	5	255	Benavente	5
52	São João da Madeira	5	192	Vila Franca de Xira	5	262	Santarém	5
64	Vila Real	5	193	Amadora	5	263	Albufeira	5
90	Aveiro	5	195	Mafra	5	267	Faro	5
92	Ílhavo	5	196	Alcochete	5	268	Lagoa	5
100	Coimbra	5	197	Almada	5	269	Lagos	5
101	Condeixa-a-Nova	5	198	Barreiro	5	270	Loulé	5
108	Leiria	5	200	Montijo	5	273	Portimão	5
139	Viseu	5	201	Palmela	5	278	Vila Real de Santo António	5
							Number of cases	45

II.2. Number of Cases in each Cluster

Cluster	1	89
	2	50
	3	92
	4	2
	5	45
Valid		278
Missing		0

II.3. Final Cluster Centres

	Cluster				
	1	2	3	4	5
I1	,257	,431	,134	,074	,498
I2	,590	,813	,421	,624	,814
I3	,790	,801	,788	,207	,806
I4	,511	,657	,387	,600	,722
I5	,657	,821	,452	,940	,864
I6	,151	,166	,083	,848	,389
I7	,662	,805	,488	,761	,817
I8	,782	,853	,687	,679	,771
I9	,786	,915	,577	,997	,935
I10	,028	,100	,014	,030	,059
I11	,118	,135	,089	,654	,223
I12	,109	,124	,058	,832	,273
I13	,009	,029	,003	,647	,055
I14	,159	,113	,139	,677	,200
I15	,605	,595	,594	,654	,684

II.4. Distances between Final Cluster Centres

Cluster	1	2	3	4	5
1		,423	,439	1,582	,590
2	,423		,846	1,587	,340
3	,439	,846		1,769	,993
4	1,582	1,587	1,769		1,378
5	,590	,340	,993	1,378	

II.5. ANOVA

	Cluster		Error		F	Sig.
	Mean Square	df	Mean Square	df		
I1	1,338	4	,009	273	150,450	,000
I2	1,816	4	,013	273	140,640	,000
I3	,174	4	,001	273	173,175	,000
I4	1,098	4	,023	273	48,115	,000
I5	1,825	4	,012	273	152,984	,000
I6	,949	4	,007	273	132,713	,000
I7	1,223	4	,016	273	78,724	,000
I8	,247	4	,013	273	18,955	,000
I9	1,455	4	,014	273	107,533	,000
I10	,067	4	,006	273	10,504	,000
I11	,277	4	,007	273	36,961	,000
I12	,606	4	,003	273	206,064	,000
I13	,220	4	,001	273	158,075	,000
I14	,188	4	,005	273	39,351	,000
I15	,071	4	,004	273	18,991	,000

II.6. One-way

Descriptive									
		N	Mean	Std. Deviation	Std. Error	95% Conf. Int. Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
I1	1	89	,257	,071	,008	,242	,272	,077	,484
	2	50	,431	,082	,012	,408	,454	,316	,752
	3	92	,134	,068	,007	,120	,148	,000	,354
	4	2	,074	,019	,014	-,099	,247	,060	,088
	5	45	,498	,167	,025	,448	,548	,161	1,000
	Total	278	,285	,168	,010	,266	,305	,000	1,000
I2	1	89	,590	,082	,009	,573	,607	,372	,779
	2	50	,813	,105	,015	,783	,843	,558	1,000
	3	92	,421	,150	,016	,390	,452	,000	,720
	4	2	,624	,033	,024	,324	,923	,600	,647
	5	45	,814	,087	,013	,788	,840	,629	,983
	Total	278	,611	,197	,012	,587	,634	,000	1,000
I3	1	89	,790	,006	,001	,789	,791	,773	,806
	2	50	,801	,018	,003	,796	,806	,766	,864
	3	92	,788	,002	,000	,788	,789	,782	,794
	4	2	,207	,292	,207	-2,418	2,832	,000	,413
	5	45	,806	,062	,009	,787	,825	,654	1,000
	Total	278	,790	,059	,004	,783	,797	,000	1,000
I4	1	89	,511	,146	,015	,481	,542	,240	1,000
	2	50	,657	,120	,017	,623	,691	,395	,892
	3	92	,387	,177	,018	,350	,424	,000	,801
	4	2	,600	,156	,110	-,800	2,000	,490	,710
	5	45	,722	,134	,020	,682	,762	,414	,997
	Total	278	,531	,196	,012	,508	,554	,000	1,000
I5	1	89	,657	,111	,012	,634	,681	,401	,880
	2	50	,821	,070	,010	,802	,841	,673	,951
	3	92	,452	,133	,014	,425	,480	,000	,669
	4	2	,940	,030	,021	,672	1,209	,919	,961
	5	45	,864	,087	,013	,838	,890	,676	1,000
	Total	278	,654	,195	,012	,631	,677	,000	1,000
I6	1	89	,151	,073	,008	,136	,166	,019	,418
	2	50	,166	,070	,010	,146	,186	,045	,346
	3	92	,083	,038	,004	,075	,091	,003	,199
	4	2	,848	,103	,073	-,073	1,770	,776	,921
	5	45	,389	,158	,024	,341	,437	,187	1,000
	Total	278	,175	,144	,009	,158	,192	,003	1,000
I7	1	89	,662	,112	,012	,638	,686	,325	,888
	2	50	,805	,106	,015	,775	,835	,564	1,000
	3	92	,488	,157	,016	,455	,521	,000	,770
	4	2	,761	,100	,071	-,135	1,658	,691	,832
	5	45	,817	,085	,013	,791	,842	,575	,990
	Total	278	,656	,182	,011	,634	,677	,000	1,000
I8	1	89	,782	,092	,010	,763	,802	,520	,959
	2	50	,853	,078	,011	,831	,875	,582	1,000

	3	92	,687	,158	,016	,654	,719	,000	,959
	4	2	,679	,101	,071	-,229	1,586	,607	,750
	5	45	,771	,073	,011	,749	,793	,607	,939
	Total	278	,761	,128	,008	,746	,776	,000	1,000
I9	1	89	,786	,101	,011	,765	,807	,550	,964
	2	50	,915	,058	,008	,899	,932	,750	,999
	3	92	,577	,165	,017	,543	,612	,000	,952
	4	2	,997	,002	,001	,983	1,012	,996	,999
	5	45	,935	,057	,008	,918	,953	,812	1,000
	Total	278	,766	,185	,011	,744	,788	,000	1,000
I10	1	89	,028	,008	,001	,027	,030	,010	,059
	2	50	,100	,187	,026	,046	,153	,025	1,000
	3	92	,014	,007	,001	,013	,016	,000	,031
	4	2	,030	,007	,005	-,029	,089	,025	,034
	5	45	,059	,017	,003	,054	,065	,028	,106
	Total	278	,042	,085	,005	,031	,052	,000	1,000
I11	1	89	,118	,081	,009	,101	,135	,000	,746
	2	50	,135	,048	,007	,121	,148	,050	,237
	3	92	,089	,069	,007	,074	,103	,008	,503
	4	2	,654	,204	,145	-1,184	2,491	,509	,798
	5	45	,223	,141	,021	,181	,265	,105	1,000
	Total	278	,132	,107	,006	,119	,145	,000	1,000
I12	1	89	,109	,048	,005	,099	,119	,000	,242
	2	50	,124	,047	,007	,110	,137	,041	,287
	3	92	,058	,027	,003	,052	,063	,001	,147
	4	2	,832	,238	,168	-1,306	2,969	,664	1,000
	5	45	,273	,091	,014	,246	,300	,145	,589
	Total	278	,126	,108	,006	,114	,139	,000	1,000
I13	1	89	,009	,007	,001	,008	,011	,001	,039
	2	50	,029	,023	,003	,022	,035	,004	,094
	3	92	,003	,002	,000	,002	,003	,000	,013
	4	2	,647	,499	,353	-3,839	5,133	,294	1,000
	5	45	,055	,048	,007	,041	,070	,006	,215
	Total	278	,023	,068	,004	,015	,031	,000	1,000
I14	1	89	,159	,058	,006	,147	,171	,072	,376
	2	50	,113	,039	,006	,101	,124	,058	,239
	3	92	,139	,059	,006	,127	,151	,032	,416
	4	2	,677	,035	,025	,361	,994	,652	,702
	5	45	,200	,118	,018	,164	,235	,078	,765
	Total	278	,154	,086	,005	,144	,164	,032	,765
I15	1	89	,605	,068	,007	,590	,619	,354	,742
	2	50	,595	,068	,010	,576	,615	,474	,719
	3	92	,594	,057	,006	,583	,606	,433	,704
	4	2	,654	,007	,005	,594	,713	,649	,658
	5	45	,684	,044	,007	,670	,697	,599	,787
	Total	278	,613	,068	,004	,605	,621	,354	,787

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[i] NUTS IV.

[ii] Based on a Friend's and Rapport's work (1979), the OECD [5] developed a model called Pressure – *status quo* – Answer (PSA) according to a causality concept which postulates that human activities exert some sort of pressure which qualitatively change the economic, social and environmental systems' *status quo*, therefore creating the need for an adequate answer through different policies and instruments.

[iii] Regarding the statistical sources used, the gathering of data was done mainly with recourse to INE (National Statistics Institut). Besides the information collected from Census 2001 [6] and Statistics Year Book 2001 and 2002 [7, 8], other publications were looked up in the Internet at www.ine.pt, such as *Estudo do Poder de CompraConcelhio 2004* (Study on Purchasing Power) [9], concerning indicator I12 – Purchasing Power. On the other hand, indicator I11 – per head GNP was calculated with recourse to Pedro Nogueira Ramos's Estimates on per head GNP in Mainland Portugal's *Concelhos* [10].

[iv] The Entrepreneurial Index per *Concelho* is the result of aggregating four indicators with equal weighting, namely: a) Business firms based on the region; b) Partnerships based on the region; c) Personnel working in partnerships based on the region; d) turnover of partnerships based on the region.

[v] The Health Index per *Concelho* is the aggregation of four indicators with the same weighting, namely: a) Number of doctors per 1.000 inhabitants; b) Number of Chemists per 10.000 inhabitants; c) Nursing personnel per 1.000 inhabitants; d) Number of beds per 1.000 inhabitants.

[vi] The Housing Conditions Index per *Concelho*is the aggregation of eleven indicators with equal weighting in eight areas, namely: a) Accessibility: % classic dwellings owned by occupants, used as a permanent residence, according to purchasing expenses over 199,51€ and % classic dwellings occupied as a permanent residence with a rent over 149,63 €; b) Housing Deficit: normal occupation index; c) Sheltering Conditions: % Classic family dwellings; d) State of Repair: % Buildings in a fair state of repair as regards infra-structures; e) Existing equipments: % Family dwellings used as a permanent residence, with electricity, water, water-closet, heating and bath; % Family dwellings used as a permanent residence with kitchen or Kitchenette; % Buildings served by urban solid waste collection; f) Sewage collection and disposal: % Family dwellings used as a permanent residence with water-closet and connected to the sewage collection and disposal system; g) Water Supply: % Family dwellings used as a permanent residence with water supplied by the ; h) Vacant dwellings: % Family vacant dwellings.

[vii] To reveal data concentration in order to effectively group them into clusters (or conglomerates) according to their homogeneity. (authors' translation).

[viii] Assuming that if a variable discriminates much among clusters, its variability (given by the *Cluster Mean Square*) will be high among clusters and low within its own cluster (obtained through the *Error Mean Square*). Thus, variables with a higher *Cluster Mean Square* and lower *Error Mean Square* are the ones which better define the clusters for they have a higher F value [11].

[ix] Since we wanted to perform mean multiple comparisons we did *a posteriori* tests to find out which of the mean pairs were different using Tukey's and Bonferroni's Post-Hoc tests.