Regional Delimitation in Continental Portugal: what does cluster analysis tell us?[1]

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1. Introduction

In the politico-administrative organisation of the Portuguese state, centralised and hierarchical, there is no place for regional power. The central power and the local authorities divide between themselves the task of planning and organising the Portuguese territory. This scenario is only different in relation to the Regional Autonomies, where there is regional government.

However, beginning in 1986, with the integration of Portugal into the EEC, the country came to adopt the concept of NUTS (the European term designating the Nomenclature of Territorial Units for Statistics) with a view to standardising the production of statistics in Portugal within the area of regional planning and development, and making them compatible with the regional aggregation which serves as a statistical base in the community regions. In 2002, owing to "changes in the socio-economic profile of the regions, in particular in NUTS II Lisboa e Vale do Tejo" the government resolved to alter the composition of the NUTS IIs – Alentejo, Lisboa e Vale do Tejo and Centro – that had existed since the 1980s.

In this study we propose, based on data for the NUTS IIIs which integrate Alentejo, Centro and Lisboa, to verify whether the changes made will or will not contribute to the maximisation of the economic distances between the NUTS IIs under analysis, which will be adequate for an increase in the homogeneity in these territories. Given that our objective is to identify the economic distances between the NUTS IIs and the NUTS IIIs

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under analysis, we will use as our methodology the first part of the clusters analysis, which allows us to identify the degree of similarity/dissimilarity between the territories.

To make this analysis we have used statistical data for the NUTS IIIs under study provided by INE (National Statistics Institute), having as reference the Pyramid of Territorial Competitiveness (Mateus, Augusto; *et al.* (2000)), in an attempt to work on the territorial groupings based on their conditions of competitiveness.

2. The politico-administrative organisation of the Portuguese territory

The Portuguese politico-administrative system has its origins in the 19th century. After the victory of liberalism, the administrative system was reorganised according to the characteristics of the Napoleonic model. And, despite certain changes occurring later, that Portuguese politico-administrative system has, in part, remained intact until now. The existence of an electoral system based on proportional representation, the diversity of political parties, the strong centralisation of the state and, at the local level, authorities with their own powers, strongly executive in nature (the *câmaras municipais*), are some of the principal characteristics.

Portugal has been a unitary state for more than 850 years. It is a long time since its frontiers were consolidated. There are no significant differences in ethnic, racial or linguistic terms and there have been no strong regional pressures, with municipalism predominating at the territorial level. However, since the end of the 1970s, the theme of creating autonomous regional government entities has, increasingly, gained greater importance on the political agenda. The Constitution of the Republic of Portugal (CRP) has, since 1976, allowed for the creation of regions, designated as "autonomous regions" in the case of the islands, and "administrative regions" in the case of the continent (Nº 1 of Article 236 of CRP is clear: "On the continent, the local authorities are the parish councils, the municipal authorities and the administrative regions"). However, the administrative regions were never instituted.

In the Portuguese continental territory we thus find two defined levels of government: the local level and the central level. At the local level there are two distinct organs of power: the municipalities and the parish councils. On the archipelagos of the Azores

and Madeira there is, between the two, a third level of administration: the region. In terms of the country we have, then, a central government, two regional governments, 308 municipalities (since 1999) and around 4,400 parish councils.

As there are no regional organs of power instituted in continental Portugal, the central government's organic model has considered the creation of decentralised organisms from various ministries within the regional or district ambit. Thus, questions within the ambit of regional development are the responsibility of *Comissões de Coordenação e Desenvolvimento Regional* (CCDRs – commissions for regional coordination and development), decentralised organisms from the Ministry of Cities, Territorial Organisation and the Environment. CCDRs aim "to execute, at the level of their respective geographical areas of activity, the policies in relation to the environment, territorial organisation, the conservation of nature and biodiversity, the sustainable use of natural resources, urban regeneration, regional strategic planning and support for local authorities and their associations, having in view integrated regional development[2]".

At the same time as the decentralised organisms of the central administration came into being, legislation had also made possible the formation of organs of local power by creating territorial entities within a supra-municipal ambit. Since then we have had Municipal Associations (Law 54/98 of 18th August and Law 172/99 of 21st September), which, fundamentally, can execute activity within the domain of municipal competence that is transferred to them. Recently, legislation of 2003 has provided the possibility of municipalities organising themselves into Inter-Municipality Communities (Law 11/2003 of 13th may) or into Metropolitan Areas (Law 10/2003 of 13th may) through which they can exercise, in supra-municipal areas, activities integrating municipal investment with an inter-municipal interest, as well as coordinating activities between municipalities and the services of central administration in various domains.

[2] Artº 1º nº 2 of the Decree Law 104/2003, which created the CCDRs.

3. Regional Policy of the European Union and Regional Delimitation in Portugal

3.1 Regional Policy of the European Union

When in 1986 Portugal joined the European Economic Community (EEC), this group of states was in the process of reformulating its regional policy, creating the so-called "Delors Package I" which envisaged the deepening of European construction, particularly through reform of the Structural Funds. The Structural Funds are the principal mechanisms for financing regional community policy. This reform aimed to promote the concentration of financing regional policy in the least developed regions, with the objective of promoting their growth and structural adjustment. Thus, in terms of regional policy, the regions of the then EEC came to be classified in relation to their characteristics and their needs (Table 1).

Table 1: Typology of classification of the regions within the ambit of the reform of Regional Policy in 1986

Type	Designation	Financing
Objective 1	Promotion of the development of backward regions (with GDP per capita <75% of the community mean)	ERDF, ESF, EAGGF
Objective 2	Help for the recovery of regions in industrial decline	ERDF, ESF
Objectives 3 and 4	Help for the long-term unemployed and unemployed young people	ESF,
Objective 5	Help for regional development	
5A	Help for the reorientation and conversion of production	EAGGF – Guidance section
5B	Conversion/restoration of rural areas	ERDF, ESF

Source: own elaboration

In 1992, with the creation of Economic and Monetary Union, the regional policy of the European Union (EU) underwent significant changes, especially with the creation of the Cohesion Fund. This is a supplementary instrument in the domain of regional policy, whose objective is contributed financially to the realisation of projects in the areas of the environment and of trans-European transport networks. The Cohesion Fund supports investment projects in countries whose gross domestic product (GDP) per capita is less than 90% of the community mean. This was the principal change to regional policy stemming from the "Delors Package II".

Later, in 1999, the countries of the EU proceeded to further reform of the structural funds insofar as, despite successive and significant increases in financing for the regional policy, particularly since 1986, the disparities between different countries continued to intensify. At the same time, the scenario of enlargement to include countries from Eastern Europe anticipated that the situation would become worse. At this stage the organisation of the regional policy, established in 1986, was significantly changed, with a reduction to three of the categories into which the diverse regions of Europe could be classified in terms of regional policy (Table 2).

Table 2: Typology of classification of the regions within the ambit of the reform of Regional Policy in 1999

Type	Designation	Financing
Objective 1	Promotion of the development and adjustment of backward regions (with GDP per capita <75% of the community mean)	ERDF, ESF, EAGGF, FIFG
Objective 2	Help for the economic and social conversion of zones with major structural difficulties	ERDF, ESF
Objective 3	Help for the adaptation and modernisation of policies and systems for education, training and employment	ESF

Source: own elaboration

At the present time, after effecting the greatest ever enlargement of the UE in May 2004, the European Commission has proposed (Table 3), for the programming period 2007-2013, significant alterations to the typology of the European regions, within the ambit of regional policy, taking into consideration that, according to the economic data of the EU, the socio-economic disparities among EU members has doubled and the mean GDP has fallen by around 12.5%.

In the regions embraced by the "Convergence" objective, the Commission proposed support not only for the regions with a GDP per capita less than 75% of the community mean, calculated for a Europe with 15 countries, but also the regions which would suffer from the so-called "statistics effect" associated with enlargement to 25 countries (phasing out regions).

In the typology of the regions included within the objective "Regional competitiveness and employment", there are two types of territories. On the one hand, there are those that are currently eligible within the ambit of "Objective 1" and which, even without taking into account the "statistics effect", are included in the "Convergence"

programmes – these regions will benefit, during a transitional period, for support called "phasing in", from a scheme comparable to that used for the regions which currently are already ineligible under "Objective 1". On the other hand, there are all the rest of the EU regions which are not the target of these "Convergence" programmes or of those for temporary support.

Table 3: Typology of classification of the classification of regions proposed by the European Commission for the programme period 2007 - 2013

Type	Designation	Financing
Convergence	Promotion of improved conditions for growth, and of the factors which lead to real convergence (with GDP per capita <75% of the community mean)	ERDF, ESF. Cohesion Fund
Regional competitiveness and employment	To promote economic change in industrial, urban and rural zones, strengthening their competitiveness and attractiveness; Support for policies that envisage full employment, the quality and productivity of labour, as well as social interaction	ERDF
European Territorial Cooperation	To promote the harmonious and balance of the territory of the Union, supporting cooperation at the transfrontier, transnational and inter-regional level	ERDF

Source: own elaboration

3.2. Regional Delimitation in Portugal

In May 1986, the NUTS units (the European term which designated the Nomenclature of Territorial Units for Statistics) were defined so as to standardise the production of statistics in Portugal in the area of regional planning and development, and to make them compatible with the aggregated territories that serve as the basis for regional community statistics.

The solution achieved by the resolution[3] which created the NUTS was the result of an extremely complicated and lengthy process given that, in preceding years, in each ministry, there was some degree of regional decentralisation for its services, but based on distinct territorial bases, corresponding to the criteria belonging to each activity. Naturally, each of these intended that the statistical information produced by the

[3] Resolution of the Council of Ministers nº 34/86, published in the 1st series nº 102 of *Diário da Republica* of 5th May 1986.

National Statistics Institute, when district delimitation was abandoned, would be whatever was most suitable for its respective sector. The Ministry of Planning and Territorial Administration, given the competencies it had in terms of development, ended up winning in terms of its territorial proposal, defending the five areas of activity of the Regional Coordination Commissions and the municipality groupings as being adequate places for synthesising regional interventions in continental Portugal.

There were established, then, in accord with community norms, three levels of aggregation of the base units – the municipalities:

- level I, comprising three units: the Continent, and the Autonomous Regions of The Açores and Madeira;
- level II, comprising seven units: the five areas of activity of the Regional Coordination Commissions and the Autonomous Regions of Açores and Madeira;
- level III, comprising 29 units, two of which relate to the Autonomous Regions of Açores and Madeira.

Although, for the definition of NUTS, many inter-ministry negotiations took place between a number of ministries, it was not possible to reach definitive agreement with the Ministry of Agriculture, which was already largely regionalised into already constituted and installed agricultural regions and zones. In effect, it was only three years later, in 1989, that a new resolution[4] harmonising the regional delimitations used by Planning and by Agriculture came into effect ; for this purpose, adjustments were made to the NUTS IIs of Lisboa e Vale do Tejo, and Alentejo (with the Ponte de Sôr municipality passing to Alentejo). In compensation, the intention of the Ministry of Agriculture to integrate Entre Douro and Vouga in Centro Region was not pushed forward. The various adjustments made within NUTS II to ensure that NUTS III should correspond to the agricultural zones, or to the sum of them, has resulted in an increase of NUTS III units from 27 to 28 in the continental territory.

[4] Decree-Law nº 46/89, of 15th February, published in the 1st series nº38 of *Diário da Republica.*

More recently, a resolution[5] from the Ministry of Cities, Territorial Organisation and the Environment has brought about a change in Decree-Law nº 46/89 of 15th February, justifying this procedure in its preamble: "The passage of more than 12 years since the approval of that statistical nomenclature has proved, on the one hand, that changes in the administrative structure of the country have required the introduction of exact adjustments in nomenclature, and, on the other hand, that there have occurred changes in the socio-economic profile of the regions, particularly in NUTS II – Lisbon and the Tejo Valley, which had to be taken into account. The intention of this decree-law has been to integrate in a single legal resolution all of the adjustments to NUTS that occurred because of changes in the administrative structure and, especially, to ensure that NUTS will be adequate for the current socio-economic profile of the regions."

Thus, article 1 defines the new Nomenclature of Territorial Units for Statistical Purposes in the following way:

- level I: comprising three units, corresponding to the territory of the Continent and each of the Autonomous Regions of Açores and Madeira;
- level II: comprising seven units, of which five are on the Continent, with a new delimitation, and also the territories of the Autonomous Regions of Açores and Madeira;
- level III: comprising 30 units, of which 28 are on the Continent, with a new delimitation, and two correspond to the Autonomous Regions of The Açores and Madeira.

Fundamentally, the changes made in NUTS II influenced Alentejo, Centro and Lisboa e Vale do Tejo, as is seen in Table 4.

[5] Decree-Law nº244/2002, of 5th November, published in the 1st series -A of *Diário da Republica*

Table 4: Changes in the composition of some NUTS IIs (DL244/2002)

NUTE's 1989		NUTE's 2002	
Alentejo	Alto Alentejo Alentejo Central Baixo Alentejo Alentejo Litoral	Alentejo	Lezíria do Tejo Alto Alentejo Alentejo Central Baixo Alentejo Alentejo Litoral
Lisboa e Vale do Tejo	Grande Lisboa Península de Setúbal Oeste Médio Tejo Lezíria do Tejo	Lisboa	Grande Lisboa Península de Setúbal
Centro	Baixo Vouga Baixo Mondego Pinhal Litoral Pinhal Interior Norte Pinhal Interior Sul Dão-Lafões Serra da Estrela Beira Interior Norte Beira Interior Sul Cova da Beira	Centro	Baixo Vouga Baixo Mondego Pinhal Litoral Pinhal Interior Norte Pinhal Interior Sul Dão-Lafões Serra da Estrela Beira Interior Norte Beira Interior Sul Cova da Beira Oeste Médio Tejo

Source: Own elaboration

The changes registered in NUTS IIs (Table 4) appear to show the concern of the legislature to distinguish, in the former NUTS Lisboa e Vale do Tejo, the most rural zones (Lezíria do Tejo, Médio Tejo and Oeste) from the more urban zones, particularly that of Grande Lisboa.

The change in the nomenclature of the territorial units had immediate effects on the positioning of each unit on the Continent in terms of traditional economic indicators that is the GDP, refined by INE within the ambit of the Regional Portuguese Accounts. In fact, as the last INE reference to Regional Accounts highlights (INE, 2004), the impact of the new nomenclature is significant in the regions affected by changes, in that the weighting of Centre in the GDP goes from 14.1% in the old nomenclature to 18.5% in the new, Alentejo moves to 6.4% (from the former 4.2%) and the contribution of new region of Lisbon is 39.9%, while the former region of Lisboa e Vale do Tejo had a weighting of 44% in the total GDP.

In 1986, when Portugal joined the CEE, the whole country was to be found with a threshold of development that could be said, in terms of the community regional policy,

to come under "Objective 1". That is, all of the Portuguese regions had a GDP per capita income less than 75% of the mean GDP of the community. And it stayed that way until the end of the 1990s when the policy that had been pursued, particularly in terms of the financing of regional community policy, began to bear fruit. In effect, Portugal has favoured a policy of global growth for the country, concentrating on the convergence of the mean Portuguese indicators with the European indicators, to the detriment of promoting a diminution in inter-regional disparities. For this reason, the regions which presented, from the outset, better conditions for growth, particularly Lisboa, but also the Algarve and Madeira, found the indicators of wealth increase in a significant way, approaching the European mean and separating themselves from the results for the rest of the regions. It can be seen (Table 5) how distinct the evolution of the Portuguese GDP was between the regions during the 1990s: while Centro and Alentejo have evolved little in their capacity to create wealth, always remaining below the mean national figure, the region of Lisboa and, especially, the region of Madeira, have registered significant increases in their wealth. However, we should not ignore the fact that the evolution of the product registered by the Autonomous Region of Madeira is strongly influenced by the location of off-shore facilities.

Table 5: Indices of Disparity in the GDPpc PPP[6] (EUR15 = 100) for some Portuguese regions

Years	Centre	Lisbon	Alentejo	Algarve	Madeira	Portugal
1995	54	95	56	66	63	66
1999	57	104	58	70	74	70
2002	58	102	61	74	82	70

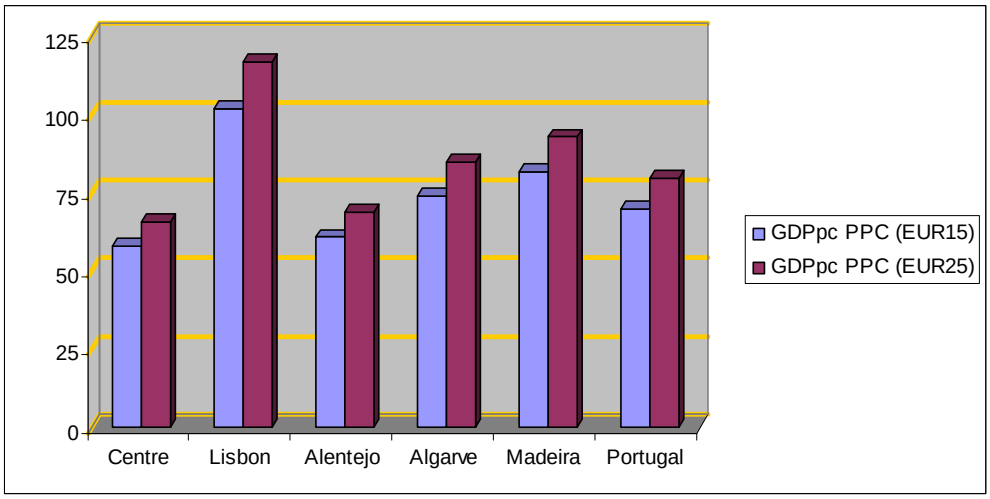
Source: INE (2004)

At the same time, the position of Portugal relative to the other countries within the European Union has significantly altered with the entry of the ten countries from Eastern Europe and the Mediterranean in May 2004 (Diagram 1). As we can affirm, the immediate consequence of the entry of this group of countries, most of them with income levels and GDP well below the community mean, places Portugal as a whole, and the diverse regions of Portugal, close to the European mean. This change has had practical affects for the diverse regions, particularly at the level of placing them within the framework of the programme for available community support. If the regions of

6 GDPpc PPP: Gross Domestic Product, the constant prices measured in Purchasing Power Parity.

Lisboa and Madeira were already outside the embrace of the "Convergence" objective, Algarve region remains, owing to the "statistics effect" of enlargement, in the "phasing-out" situation. For the regions that have passed, in real terms, the barrier of 75% of the mean European GDP, the volume and the type of financing which, from the next programmed period of 2007 – 2013, will be available for these regions will certainly be reduced and different in comparison with what has happened up to now. The regions of Centro and Alentejo still continue to include within this objective, which is aimed at supporting the territories with difficulties in structural adjustment. If we analyse the change verified in Portugal as a whole, we conclude that Portugal, through the "statistics affect", is no longer to be considered a country of the most needy, having passed the barrier of 75% of mean EU GDPpc: in 2002, in a Europe of 15 countries, the Index of Disparity in GDPpc PPP was 70, whereas, in the Europe of 25 countries, it has attained a value of 80.

Diagram 1: The "statistics effect" of the enlargement of the European Union (2002)



Source: INE (2004)

4. Methodolgy

All our analysis of the data is concerned only with the NUTS II regions which have undergone change – Lisboa e Vale do Tejo (now Lisboa), Centro and Alentejo – and the respective NUTS III regions which they comprise.

As such we propose, starting with data related to the NUTS III regions of continental Portugal (only those to be found in the level II regions whose composition has been changed by the new nomenclature), to verify what, in NUTS II terms, is the most suitable aggregation with the socio-economic characteristics of these spaces and with their homogeneity.

Our statistics gathering had, as its reference, the Pyramid of Territorial Competitiveness (Mateus et al, (2000)), in an attempt to form groupings of territorial units based on their conditions of competitiveness, which can be characterised according to various domains: demography, dynamic of the labour market, qualifications, innovation, entrepreneurial dynamic, productive specialisation, support infrastructures for production activity. As well as these themes, we have also tried to assemble indicators traditionally used to compare levels of development in the regions (GDP per capita – GDPpc) and regional purchasing power (index of local purchasing power – the per capita indicator and factor of relative dynamism). In Annexe I is presented a selection of variables by theme, the choice having been conditioned by the availability of information from official sources (INE, Portugal in Numbers, 2004) for the spatial units being analysed (NUTS III).

Given that our objective is to identify the homogeneous groups of NUTS IIIs, resulting in the better grouping of NUTS IIs, we have used Clusters Analysis as our methodology of reference. Following Brochedo (2002), where Clusters Analysis is recommended when given a conjunction of N objects characterised by a collection of K variables, our intention is to derive a partition of the data into a number of groups or segments which could be internally homogeneous or externally heterogeneous. In terms of spatial analysis, the "definition of homogeneous regions i.e. groupings of contiguous places with similar characteristics" is one of the passive objects of a classification process of territorial units.

In practice, however, a problem arises when we try to form groups of territorial units that are both homogeneous and also contiguous in terms of space. In fact, nothing guarantees that the final groups obtained (Clusters) comprise territorial units with spatial contiguity, and also we cannot force this spatial contiguity by the imposition of restrictions without disturbing the whole analysis. We have, therefore, chosen to study

the economic similarities/differences of the spaces analysed (the first step in the hierarchical method of clusters analysis).

In the first phase we constructed a matrix of economic distances (Annexe II) between the special units of level III (NUTS III), which comprise the three NUTS II regions that were subjected to change, based on the statistical information gathered (48 variables). For this we used the traditional Euclidian concept of distance:

$$d_{nm} = \sqrt{\sum_{k=1}^{K} (x_{nk} - x_{mk})^2} ,$$

in which:

- *n* and *m* represent the NUTS III regions under study;
- $1 \leq k \leq 48$ and identifies the variables used;
- *x* translates the values assumed for different variables, in different regions.

Later, we considered all possible combinations of the NUTS III regions (Annexe III) in a way that created artificial NUTS II regions (Clusters), that is, groupings of possible regions between the initial situation (before the new legislation) and the current situation.

Relative to these artificial regions, we assembled the possible information, beginning with the framework of initial variables (26 variables), and we constructed a matrix of inter-regional economic distances (inter-Clusters) associated with each one of the hypotheses (Annexe IV). We then applied an Analysis of Variance (ANOVA – unique factor) to all of those hypotheses, with its base in the GDPpc indicator, since this is an indicator that is widely used for inter-spatial comparisons (Annexe V).

5. Results

The matrix of distances obtained from the NUTS IIIs allows us to identify the territories to which, relatively, the regions of Oeste, Médio Tejo and Lezíria do Tejo present the major differences. In Table 6, the regions are arranged in descending order of

difference[7] in relation to the territory we are analysing. It also indicates, for some regions, the proportion of the total registered difference between the space being analysed and the rest of the NUTS IIIs.

Table 6: Ordering of NUTS IIIs in relation to their differences

	Península de Setúbal	Oeste	Médio Tejo	Lezíria do Tejo
Baixo Vouga	17	8	14	6
Baixo Mondego	10	13	15	17
Pinhal Litoral	18	9	3 (5,71%)	5
Pinhal Interior Norte	6	7	13	13
Dão-Lafões	11	17	16	18
Pinhal Interior Sul	13	14	6	12
Serra da Estrela	14	16	5 (5,01%)	11
Beira Interior Norte	7	10	12	15
Beira Interior Sul	8	11	8	14
Cova da Beira	15	18	4 (5,09%)	9
Oeste	16		11	10
Médio Tejo	2 (6,81%)	4		4
Grande Lisboa	1 (7,4%)	1 (29,14%)	1 (16,71%)	1 (32,61%)
Península de Setúbal		2 (11,76%)	2 (8,83%)	2 (14,42%)
Lezíria do Tejo	12	15	17	
Alentejo Litoral	3 (6,56%)	3 (10,32%)	18	3 (10,16%)
Alto Alentejo	5 (6,10%)	6	10	8
Alentejo Central	9	12	9	16
Baixo Alentejo	4 (6,48%)	5	7	7

Source: Own elaboration

In all the cases studied, Grande Lisboa region is always the one that registers the greatest differences compared to those territories analysed, followed next by Peninsula de Setúbal. However, it is interesting to note that, also in relation to Peninsula de Setúbal, it is Grande Lisboa that is the region that presents the bigger differences, in the form of NUTS II Lisbon. We can thus say that Grande Lisboa, in terms of the group of indicators selected for this study, is truly an "island" without any other territories close to it.

[7] Index 1 corresponds to the greatest difference, while Index 18 corresponds to the least difference, and the greatest similarity

In relation to Oeste region, we can consider that its integration into the Centro region contributed to minimising the economic distance between the territories, insofar as the greater distances are registered, in the first place, by the NUTS IIIs of first Lisboa and then the Alentejo. Of the total differences between Oeste and the rest of the regions, 51.2% are explained by the NUTS of Grande Lisboa, Peninsula de Setúbal and Alentejo Litoral.

In respect of the region of Médio Tejo, we can conclude that, apart from the significant differences relative to the NUTS IIIs of the region of Lisboa, the greatest differences are with the Centro, into which it used to be integrated. However, we must point out that, in this case, the distances for the rest of the sub-regions of Centro and Alentejo are relatively identical.

In the case of Lezíria do Tejo, the principal differences are also with the Lisboa NUTS, but equally significant are the distances for Alentejo, the NUTS into which it is integrated (particularly for Alentejo Litoral). However, in this case, the regions of Grande Lisboa, Peninsula de Setúbal and Alentejo Litoral explain 57.2% of the total differences between Lezíria do Tejo and the rest of the regions.

Analysis of the distances relative to Peninsula de Setúbal also shows us that the principal difference occurs in relation to Grande Lisboa, followed by Médio Tejo and the sub-regions of Alentejo. From the point of view of NUTS II aggregations, given the necessary requirements in terms of territorial contiguity, and owing to remoteness (in terms of economic distance) in relation to Alentejo, it would only make sense to include Peninsula de Setúbal in Centro NUTS if Lezíria do Tejo and Médio Tejo were also here.

The distance matrices, calculated for the “artificial” NUTS IIs created on the basis of 26 economic variables susceptible to aggregation, allows us to conclude that the territorial organisation prior to DL 244/2002 was such that it permitted us to obtain a value less than the sum of the differences, that is, it was the territorial organisation that minimised the differences between Alentejo, Lisboa and Centro. At the same time, based on the matrix of distances for NUTS IIs currently existent, we can verify that the distances between the territories increased significantly (21.1%). However, when the organisation

of the NUTS IIs is simulated, in the scenario in which all the NUTS IIIs that emerged from Lisboa e Vale do Tejo came to be integrated in Centro NUTS, we obtain the greatest differences between the territories and, consequently, the territorial organisation where the regions show greater economic proximity. In all of the cases that were simulated, the persistent fact is that the Lisboa NUTS is the one that contributed with the biggest parcel in explaining the distances between these territories.

In Annexe V are presented the results of the application of ANOVA to some of hypothetical Clusters. Although our analysis is in relation to the initial situation (before the legal changes), the current situation and some of the intermediate scenarios deserve some attention.

Relative to the initial situation – Lisboa e Vale do Tejo (LVT) comprising 5 NUTS III regions, Grande Lisboa, Peninsula de Setúbal, Oeste, Médio Tejo and Lezíria do Tejo – the ANOVA, based on the variable GDPpc and having as reference a level of significance of 5% (α=0,05), shows that the difference between NUTS II regions (LVT, Centro and Alentejo) is not significant ($P > 0,05$).

The situation after the legislative change – Lisbon comprising only 2 NUTS III regions, Grande Lisboa and Peninsula de Setúbal – reveals a significant difference ($P=0,03 < 0,05$) between NUTS II regions (Lisboa, Centro and Alentejo).

The intermediate cases, whose difference between regions shows greatest significance ($P < 0,05$), respect hypotheses 12 to 17 inclusive, combination 15 ($P=0,025$) being highlighted – Lisboa with its present configuration, the Oeste passing to Centre, and Médio Tejo and Lezíria do Tejo to Alentejo.

The ANOVA results in fact support the decision to isolate the NUTS III regions of Grande Lisboa and Peninsula de setúbal, with doubts remaining only in the choice of a NUTS II more adequate for the regions that emerged from LVT.

6. Conclusions

In fact, the new territorial organisation resulting from DL 244/2002 has produced a greater intra-regional homogeneity in the NUTS IIs in terms of the indicators of economic and social development, as all of the earlier statistical evidence shows. The separation of the NUTS IIIs of Grande Lisboa and Peninsula de Setúbal from the rest of the territories that comprised the former NUTS II of Lisboa e Vale do Tejo has clarified the positioning relative to the different territorial units as well as to inter-regional asymmetry.

If no doubts remain relative to the new NUTS II of Lisboa, we cannot conclude the same in relation to the new NUTS IIs of Centro and Alentejo:

i) when we analyse the results obtained from the matrix of distances constructed with its base in NUTS IIIs, we can see that Oeste and Lezíria do Tejo are the closest, in economic terms, in relation to the other NUTS IIIs of Centro region, while Médio Tejo shows the closest resemblance to the Alentejo;

ii) when we analyse the results obtained from the matrix of distances constructed with its base in NUTS IIs, we can conclude that the solution that maximises the differences between NUTS IIs results from the inclusion of these three territories in Centro region;

iii) when we apply the analysis of variance to the NUTS II hypotheses, the result is more significant (a greater distance between groups) in respect of the inclusion of Oeste in Centre, and the rest of the regions in Alentejo.

In the new aggregation, the inclusion of Oeste in Centre region appears adequate from a socio-economic point of view. We cannot yet be so categorical in relation to the inclusion of Lezíria do Tejo in Alentejo, and Médio Tejo in Centro.

In relation to the application of potential support within the ambit of community regional policy, this new territorial organisation, in more explicitly distinguishing the territories, allows a better adaptation of the incentives to the socio-economic reality of each type of intervention.

Since this is the first application we have made of this methodology in relation to these variables, we think that, from now on, we could consolidate this analysis through:

i) the application of this methodology to all of the NUTS IIIs in Continental Portugal;

ii) the exercise of variance analysis based on other variables;

iii) the identification, through analysing the principal components, of the factors which best explain the differences between the various territorial units.

At the same time, we acknowledge the challenge of resolving the question of spatial contiguity by integrally applying the inherent methodology of cluster analysis with a basis in information about municipal council areas.

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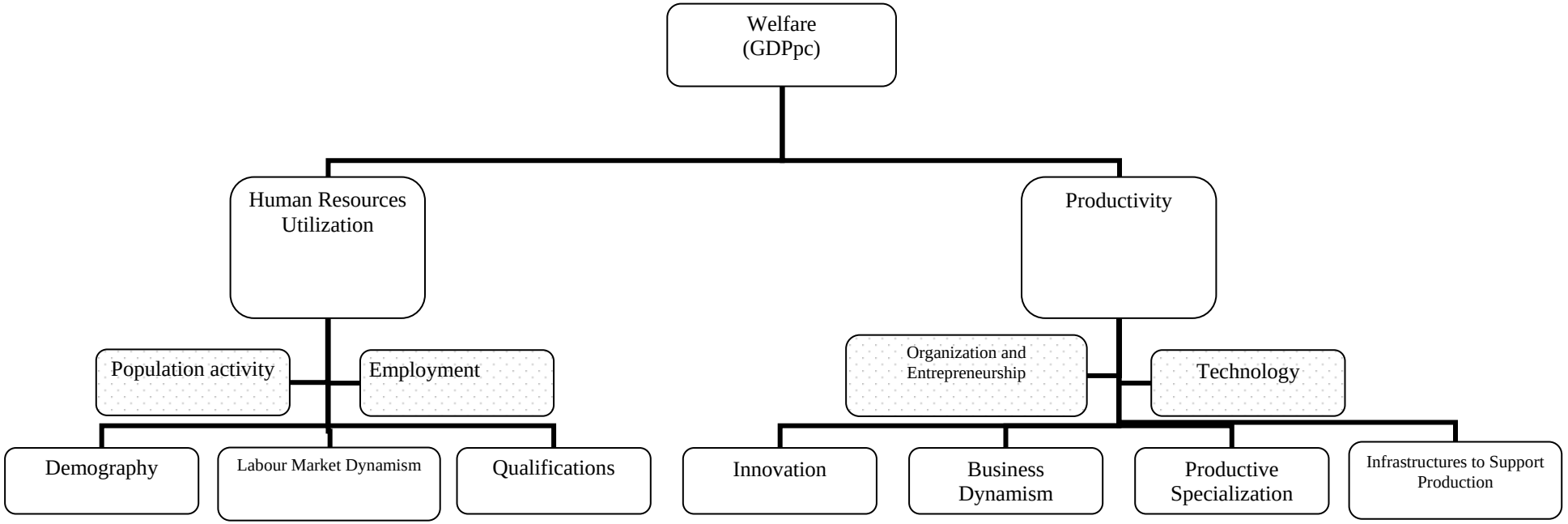
8. Annexes

I – Selection of variables

Pyramid of Territorial Competitiveness



Fonte: Mateus, Augusto; *et al*. (2000)

Variables	Time	Code
1) Demography		
1.1. Natural balance	2002	SN
1.2. Population density	1991/2001	DP
1.3. Elderly proportion (%)	1991/2001	%Idosos
1.4. Young person proportion (%)	1991/2001	%Jovens
2) Labour market dynamism		
2.1. Activity rate	1991/2001	TxAct
2.2. Employment in tertiary sector (%)	1991/2001	%EmpIII
2.3. Unemployment rate	1991/2001	TxDes
3) Qualifications		
3.1. People who knows read and write (%)	1991/2001	%PopLer
3.2. Illiteracy rate	1991/2001	Tx Analf
3.3. Population with basic education (%)	1991/2001	%Pop3ºC
3.4. Population with superior education (%)	1991/2001	%PopES
4) Innovation		
(…)		
5) Business dynamism		
5.1. Electricity expenditure of industries (%)	1998-2002	%CIElect
5.2. Automobiles sale by 100 inhabitants	2001-2002	VAp/100h
5.3. Firms constituted by activity sector	2003	SC_A+B…L a Q
5.4. Conceded credit per capita	1995-2002	CCpc
6) Productive specialization		
6.1. Sales of industry (%)	2001	%VVIndT
6.2. Sales of commerce (%)	2001	%VVCom
6.3. Industrial firms constituted (%)	2003	%SCIndT
6.4. Commerce firms constituted (%)	2003	%SCCom
6.5. Productivity (sales by employee) by activity sector	2001	VVN/NPS_A+B…
7) Infrastructures		
7.1. Secondary Schools	1998/99- 2002/03	EstabES
7.2. Professional Schools	1998/99- 2002/03	EstabEP
7.3. Population with water in home (%)	2002	%PopAbastAgua
7.4. Population served with residual waters treatment (%)	2002	%PopTratAgua
7.5. Population served with solid residuals collect (%)	2002	%PopRecResSol
8) Another variables		
8.1. Purchase power index	2002	PCC_Ipc
8.2. Factor of relative dynamism	2002	PCC_FDR

II – Matrix of the distances between NUTS IIIs

		N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19
N1	Baixo Vouga	0,00	1.032,78	431,31	1.218,09	954,84	971,65	929,78	1.164,29	1.105,24	809,13	625,99	1.742,18	5.047,23	1.742,19	922,09	1.787,57	1.301,07	1.084,70	1.469,82
N2	Baixo Mondego	1.032,78	0,00	1.034,12	295,49	185,32	392,32	398,09	285,23	300,56	463,85	450,19	1.742,04	5.903,44	2.655,75	248,33	2.002,76	365,31	254,96	506,40
N3	Pinhal Litoral	431,31	1.034,12	0,00	1.211,75	963,47	902,21	853,93	1.144,18	1.060,69	712,04	600,44	2.107,59	5.056,02	1.667,08	970,25	2.172,84	1.276,37	1.041,21	1.457,74
N4	Pinhal Interior Norte	1.218,09	295,49	1.211,75	0,00	296,30	375,53	408,39	104,64	216,94	537,95	647,34	1.743,52	6.152,91	2.861,83	346,36	2.026,68	125,60	216,74	276,61
N5	Dão-Lafões	954,84	185,32	963,47	296,30	0,00	299,16	309,28	263,31	262,32	377,67	384,00	1.687,92	5.882,44	2.601,31	156,51	1.930,46	375,77	210,68	536,54
N6	Pinhal Interior Sul	971,65	392,32	902,21	375,53	299,16	0,00	101,20	299,69	203,90	218,72	433,64	1.844,60	5.901,75	2.547,96	361,77	2.061,98	430,17	239,27	610,58
N7	Serra da Estrela	929,78	398,09	853,93	408,39	309,28	101,20	0,00	337,49	248,20	152,19	394,09	1.849,96	5.857,72	2.503,09	366,69	2.059,41	461,83	262,72	645,78
N8	Beira Interior Norte	1.164,29	285,23	1.144,18	104,64	263,31	299,69	337,49	0,00	138,69	466,54	591,70	1.766,40	6.100,66	2.795,25	314,50	2.034,70	169,33	152,63	339,69
N9	Beira Interior Sul	1.105,24	300,56	1.060,69	216,94	262,32	203,90	248,20	138,69	0,00	377,93	533,22	1.818,61	6.034,20	2.708,15	330,61	2.067,19	261,37	132,98	436,98
N10	Cova da Beira	809,13	463,85	712,04	537,95	377,67	218,72	152,19	466,54	377,93	0,00	306,48	1.878,51	5.719,11	2.360,55	418,25	2.063,52	591,80	371,37	778,16
N11	Oeste	625,99	450,19	600,44	647,34	384,00	433,64	394,09	591,70	533,22	306,48	0,00	1.782,67	5.531,79	2.231,58	398,06	1.958,19	721,72	499,19	893,02
N12	Médio Tejo	1.742,18	1.742,04	2.107,59	1.743,52	1.687,92	1.844,60	1.849,96	1.766,40	1.818,61	1.878,51	1.782,67	0,00	6.173,90	3.262,84	1.592,84	482,38	1.813,05	1.814,57	1.832,90
N13	Grande Lisboa	5.047,23	5.903,44	5.056,02	6.152,91	5.882,44	5.901,75	5.857,72	6.100,66	6.034,20	5.719,11	5.531,79	6.173,90	0,00	3.546,09	5.871,45	5.993,06	6.215,78	5.992,38	6.376,36
N14	Península de Setúbal	1.742,19	2.655,75	1.667,08	2.861,83	2.601,31	2.547,96	2.503,09	2.795,25	2.708,15	2.360,55	2.231,58	3.262,84	3.546,09	0,00	2.597,11	3.143,75	2.926,64	2.689,86	3.106,07
N15	Lezíria do Tejo	922,09	248,33	970,25	346,36	156,51	361,77	366,69	314,50	330,61	418,25	398,06	1.592,84	5.871,45	2.597,11	0,00	1.829,81	424,62	279,94	576,53
N16	Alentejo Litoral	1.787,57	2.002,76	2.172,84	2.026,68	1.930,46	2.061,98	2.059,41	2.034,70	2.067,19	2.063,52	1.958,19	482,38	5.993,06	3.143,75	1.829,81	0,00	2.099,62	2.064,38	2.147,19
N17	Alto Alentejo	1.301,07	365,31	1.276,37	125,60	375,77	430,17	461,83	169,33	261,37	591,80	721,72	1.813,05	6.215,78	2.926,64	424,62	2.099,62	0,00	242,62	198,81
N18	Alentejo Central	1.084,70	254,96	1.041,21	216,74	210,68	239,27	262,72	152,63	132,98	371,37	499,19	1.814,57	5.992,38	2.689,86	279,94	2.064,38	242,62	0,00	427,18
N19	Baixo Alentejo	1.469,82	506,40	1.457,74	276,61	536,54	610,58	645,78	339,69	436,98	778,16	893,02	1.832,90	6.376,36	3.106,07	576,53	2.147,19	198,81	427,18	0,00

III – “Artificial” clusters

Clusters 1	*Clusters 2*	*Clusters 3*	*Clusters 4*	*Clusters 5*	*Clusters 6*	*Clusters 7*	*Clusters 8*	*Clusters 9*
Grande Lisboa	Grande Lisboa	Grande Lisboa	Grande Lisboa	Grande Lisboa	Grande Lisboa	Grande Lisboa	Grande Lisboa	Grande Lisboa
Península de Setúbal	Península de Setúbal	Península de Setúbal	Península de Setúbal	Península de Setúbal	Península de Setúbal	Península de Setúbal	Península de Setúbal	Península de Setúbal
Oeste	Oeste	Oeste	Oeste	Oeste	Oeste	Oeste	Oeste	Oeste
Médio Tejo	Médio Tejo	Médio Tejo	Médio Tejo	Médio Tejo	Médio Tejo	Médio Tejo	Médio Tejo	Médio Tejo
Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo
Alto Alentejo	Alto Alentejo	Alto Alentejo	Alto Alentejo	Alto Alentejo	Alto Alentejo	Alto Alentejo	Alto Alentejo	Alto Alentejo
Alentejo Central	Alentejo Central	Alentejo Central	Alentejo Central	Alentejo Central	Alentejo Central	Alentejo Central	Alentejo Central	Alentejo Central
Alentejo Litoral	Alentejo Litoral	Alentejo Litoral	Alentejo Litoral	Alentejo Litoral	Alentejo Litoral	Alentejo Litoral	Alentejo Litoral	Alentejo Litoral
Baixo Alentejo	Baixo Alentejo	Baixo Alentejo	Baixo Alentejo	Baixo Alentejo	Baixo Alentejo	Baixo Alentejo	Baixo Alentejo	Baixo Alentejo
Baixo Vouga	Baixo Vouga	Baixo Vouga	Baixo Vouga	Baixo Vouga	Baixo Vouga	Baixo Vouga	Baixo Vouga	Baixo Vouga
Dão-Lafões	Dão-Lafões	Dão-Lafões	Dão-Lafões	Dão-Lafões	Dão-Lafões	Dão-Lafões	Dão-Lafões	Dão-Lafões
Beira Interior Norte	Beira Interior Norte	Beira Interior Norte	Beira Interior Norte	Beira Interior Norte	Beira Interior Norte	Beira Interior Norte	Beira Interior Norte	Beira Interior Norte
Serra da Estrela	Serra da Estrela	Serra da Estrela	Serra da Estrela	Serra da Estrela	Serra da Estrela	Serra da Estrela	Serra da Estrela	Serra da Estrela
Cova da Beira	Cova da Beira	Cova da Beira	Cova da Beira	Cova da Beira	Cova da Beira	Cova da Beira	Cova da Beira	Cova da Beira
Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte
Baixo Mondego	Baixo Mondego	Baixo Mondego	Baixo Mondego	Baixo Mondego	Baixo Mondego	Baixo Mondego	Baixo Mondego	Baixo Mondego
Pinhal Litoral	Pinhal Litoral	Pinhal Litoral	Pinhal Litoral	Pinhal Litoral	Pinhal Litoral	Pinhal Litoral	Pinhal Litoral	Pinhal Litoral
Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul
Beira Interior Sul	Beira Interior Sul	Beira Interior Sul	Beira Interior Sul	Beira Interior Sul	Beira Interior Sul	Beira Interior Sul	Beira Interior Sul	Beira Interior Sul

Clusters 10	*Clusters 11*	*Clusters 12*	*Clusters 13*	*Clusters 14*	*Clusters 15*	*Clusters 16*	*Clusters 17*
Grande Lisboa	Grande Lisboa	Grande Lisboa	Grande Lisboa	Grande Lisboa	Grande Lisboa	Grande Lisboa	Grande Lisboa
Península de Setúbal	Península de Setúbal	Península de Setúbal	Península de Setúbal	Península de Setúbal	Península de Setúbal	Península de Setúbal	Península de Setúbal
Oeste	Oeste	Oeste	Oeste	Oeste	Oeste	Oeste	Oeste
Médio Tejo	Médio Tejo	Médio Tejo	Médio Tejo	Médio Tejo	Médio Tejo	Médio Tejo	Médio Tejo
Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo	Lezíria do Tejo
Alto Alentejo	Alto Alentejo	Alto Alentejo	Alto Alentejo	Alto Alentejo	Alto Alentejo	Alto Alentejo	Alto Alentejo
Alentejo Central	Alentejo Central	Alentejo Central	Alentejo Central	Alentejo Central	Alentejo Central	Alentejo Central	Alentejo Central
Alentejo Litoral	Alentejo Litoral	Alentejo Litoral	Alentejo Litoral	Alentejo Litoral	Alentejo Litoral	Alentejo Litoral	Alentejo Litoral
Baixo Alentejo	Baixo Alentejo	Baixo Alentejo	Baixo Alentejo	Baixo Alentejo	Baixo Alentejo	Baixo Alentejo	Baixo Alentejo
Baixo Vouga	Baixo Vouga	Baixo Vouga	Baixo Vouga	Baixo Vouga	Baixo Vouga	Baixo Vouga	Baixo Vouga
Dão-Lafões	Dão-Lafões	Dão-Lafões	Dão-Lafões	Dão-Lafões	Dão-Lafões	Dão-Lafões	Dão-Lafões
Beira Interior Norte	Beira Interior Norte	Beira Interior Norte	Beira Interior Norte	Beira Interior Norte	Beira Interior Norte	Beira Interior Norte	Beira Interior Norte
Serra da Estrela	Serra da Estrela	Serra da Estrela	Serra da Estrela	Serra da Estrela	Serra da Estrela	Serra da Estrela	Serra da Estrela
Cova da Beira	Cova da Beira	Cova da Beira	Cova da Beira	Cova da Beira	Cova da Beira	Cova da Beira	Cova da Beira
Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte	Pinhal Interior Norte
Baixo Mondego	Baixo Mondego	Baixo Mondego	Baixo Mondego	Baixo Mondego	Baixo Mondego	Baixo Mondego	Baixo Mondego
Pinhal Litoral	Pinhal Litoral	Pinhal Litoral	Pinhal Litoral	Pinhal Litoral	Pinhal Litoral	Pinhal Litoral	Pinhal Litoral
Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul	Pinhal Interior Sul
Beira Interior Sul	Beira Interior Sul	Beira Interior Sul	Beira Interior Sul	Beira Interior Sul	Beira Interior Sul	Beira Interior Sul	Beira Interior Sul

IV – Matrices of the distances between NUTS IIs

Distance Matrix – Before 2002

	Centro	LVT	Alent	**∑ij (i=1…3)**
Centro	0	9437,459	2244	**11681,808**
Lisboa e Vale do Tejo	9437,459	0	8770	**18207,315**
Alentejo	2244,349	8769,856	0	**11014,205**
∑ij (i=1…3)	**11681,81**	**18207,32**	**11014**	**40903,328**

Distance Matrix - Now

	Centro	LVT	Alent	**∑ij (i=1…3)**
Centro	0	11802,08	2457	**14259,44**
Lisboa e Vale do Tejo	11802,08	0	10523	**22324,853**
Alentejo	2457,356	10522,77	0	**12980,125**
∑ij (i=1…3)	**14259,44**	**22324,85**	**12980**	**49564,418**

Distance Matrix - Cluster 13

	Centro	LVT	Alent	**∑ij (i=1…3)**
Centro	0	12412,45	3788	**16200,11**
Lisboa e Vale do Tejo	12412,45	0	10005	**22417,59**
Alentejo	3787,658	10005,14	0	**13792,796**
∑ij (i=1…3)	**16200,11**	**22417,59**	**13793**	**52410,496**

ANEXO V – ANOVA output

Ano 2002	**PIBpc**
	10^3Euros
Grande Lisboa	21,1
Península de Setúbal	9,8
Oeste	9,8
Médio Tejo	11,2
Lezíria do Tejo	11,5
Alto Alentejo	9,7
Alentejo Central	10,7
Alentejo Litoral	12,8
Baixo Alentejo	8,9
Baixo Vouga	11,2
Dão-Lafões	8
Beira Interior Norte	8,4
Serra da Estrela	6,8
Cova da Beira	8,9
Pinhal Interior Norte	7,2
Baixo Mondego	11,6
Pinhal Litoral	12,4
Pinhal Interior Sul	7,5
Beira Interior Sul	10,7

BEFORE

Anova: factor único

SUMÁRIO

Grupos	*Contagem*	*Soma*	*Média*	*Variância*
LVT	5	63,4	12,68	22,767
ALENTEJO	4	42,1	10,525	2,8425
CENTRO	10	92,7	9,27	4,113444444

ANOVA

Fonte de variação	*SQ*	*gl*	*MQ*	*F*	*valor P*	*F crítico*
Entre grupos	38,80455263	2	19,40227632	2,272320115	0,135322975	3,633715551
Dentro de grupos	136,6165	16	8,53853125			
Total	175,4210526	18				

NOW

Anova: factor único

SUMÁRIO

Grupos	*Contagem*	*Soma*	*Média*	*Variância*
LVT	2	30,9	15,45	63,845
ALENTEJO	5	53,6	10,72	2,322
CENTRO	12	113,7	9,475	3,683863636

ANOVA

Fonte de variação	*SQ*	*gl*	*MQ*	*F*	*valor P*	*F crítico*
Entre grupos	61,76555263	2	30,88277632	4,347562776	0,031050597	3,633715551
Dentro de grupos	113,6555	16	7,10346875			
Total	175,4210526	18				

CLUSTER 12

Anova: factor único

SUMÁRIO

Grupos	*Contagem*	*Soma*	*Média*	*Variância*
LVT	3	42,4	14,13333333	37,12333333
ALENTEJO	5	53,3	10,66	2,223
CENTRO	11	102,5	9,318181818	3,727636364

ANOVA

Fonte de variação	*SQ*	*gl*	*MQ*	*F*	*valor P*	*F crítico*
Entre grupos	55,00602233	2	27,50301116	3,654428999	0,049293754	3,633715551
Dentro de grupos	120,4150303	16	7,525939394			
Total	175,4210526	18				

CLUSTER 13

Anova: factor único

SUMÁRIO

Grupos	*Contagem*	*Soma*	*Média*	*Variância*
LVT	2	30,9	15,45	63,845
ALENTEJO	4	42,1	10,525	2,8425
CENTRO	13	125,2	9,630769231	3,692307692

ANOVA

Fonte de variação	*SQ*	*gl*	*MQ*	*F*	*valor P*	*F crítico*
Entre grupos	58,74086032	2	29,37043016	4,027477786	0,038310991	3,633715551
Dentro de grupos	116,6801923	16	7,292512019			
Total	175,4210526	18				

CLUSTER 14

Anova: factor único

SUMÁRIO

Grupos	*Contagem*	*Soma*	*Média*	*Variância*
LVT	2	30,9	15,45	63,845
ALENTEJO	7	74,6	10,65714286	1,722857143
CENTRO	10	92,7	9,27	4,113444444

ANOVA

Fonte de variação	*SQ*	*gl*	*MQ*	*F*	*valor P*	*F crítico*
Entre grupos	64,21790977	2	32,10895489	4,619862937	0,026078511	3,633715551
Dentro de grupos	111,2031429	16	6,950196429			
Total	175,4210526	18				

CLUSTER 15

Anova: factor único

SUMÁRIO

Grupos	*Contagem*	*Soma*	*Média*	*Variância*
LVT	2	30,9	15,45	63,845
ALENTEJO	6	64,8	10,8	1,896
CENTRO	11	102,5	9,318181818	3,727636364

ANOVA

Fonte de variação	*SQ*	*gl*	*MQ*	*F*	*valor P*	*F crítico*
Entre grupos	64,819689	2	32,4098445	4,688527292	0,024970667	3,633715551
Dentro de grupos	110,6013636	16	6,912585227			
Total	175,4210526	18				

CLUSTER 16

Anova: factor único

SUMÁRIO

Grupos	*Contagem*	*Soma*	*Média*	*Variância*
LVT	2	30,9	15,45	63,845
ALENTEJO	6	63,4	10,56666667	1,998666667
CENTRO	11	103,9	9,445454545	4,040727273

ANOVA

Fonte de variação	*SQ*	*gl*	*MQ*	*F*	*valor P*	*F crítico*
Entre grupos	61,17544657	2	30,58772329	4,283784641	0,032364011	3,633715551
Dentro de grupos	114,2456061	16	7,140350379			
Total	175,4210526	18				

CLUSTER 17

Anova: factor único

SUMÁRIO

Grupos	*Contagem*	*Soma*	*Média*	*Variância*
LVT	2	30,9	15,45	63,845
ALENTEJO	5	53,3	10,66	2,223
CENTRO	12	114	9,5	3,785454545

ANOVA

Fonte de variação	*SQ*	*gl*	*MQ*	*F*	*valor P*	*F crítico*
Entre grupos	61,04405263	2	30,52202632	4,269673283	0,032662988	3,633715551
Dentro de grupos	114,377	16	7,1485625			
Total	175,4210526	18				