DETERMINANT FACTORS OF STRUCTURAL SIMILARITY AT THE REGIONAL LEVEL: EVIDENCE FROM PORTUGAL

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Abstract: There is scant evidence on the determinant factors of structural similarity between geographical spaces; moreover, it has been produced considering only the national level. The present study provides evidence on this topic at the regional level, based on the analysis of 275 Portuguese counties. The results obtained confirm the importance of several explanatory factors, suggesting that the structural similarity between Portuguese counties increases with geographical proximity, the existence of a shared boundary, the similarity of factor endowments in terms of physical and human capital and the similarity in terms of economic centrality and market dimension.
Key-words: productive structure, Portugal, structural similarity
JEL Codes: R11, R12, R30

1. Introduction

Analysis of the spatial location of economic activity has attracted a vast interest in the last fifteen years in the context of the so-called new economic geography (NEG), based on Krugman's (1991) pioneering model.[1] One particular question which has aroused some interest concerns the factors which promote the structural similarity of countries, i.e., similarity of their sectoral productive structures (Barrios et al., 2002; Wacziarg, 2004). This level of analysis may nevertheless mask relevant intra-national spatial effects (Storper et al., 2002), which have remained under-explored.

The present study continues on this line of research but at a national scale, as it seeks to explain structural similarity at the regional level, taking Portugal as the country of reference. A natural interest of this type of analysis comes out by providing guidance for regional policies aiming to promote structural convergence.

Earlier empirical analysis conducted on Portugal led to the conclusion that the period following Portugal's entry into the EU in 1986, until at least 2000, was characterised, both at the manufacturing industry level in aggregated terms and in the majority of the manufacturing sectors considered individually, by a trend to spatial dispersion (Crespo and Fontoura, 2008). Indeed, the evidence presented in this study reveals a reduction in the proportion of manufacturing industry located in those regions in which, at the time of entry into the EU, there was more economic activity. Consequently, a process of

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[1] See Martin and Sunley (1996) for a critical assessment of Krugman's NEG, in particular, its emphasis on pecuniary externalities, whilst dealing only briefly with technological externalities, and the exclusion of non-economic factors, since they are not easily tractable in mathematical terms.

structural convergence took place at the regional level in terms of productive specialisation. This paper complements this evidence by establishing which factors explain the structural similarity observed at the regional level in the end of that period.

With regard to the evidence already produced in this respect, the present study has two main advantages. Firstly, as previously mentioned, while the earlier studies opted to conduct their analyses at the national level, this paper uses a spatial disaggregation at the regional level. A particular advantage of this option is that it enables a greater spatial disaggregation (275 counties, in the present case). Secondly, analysis of the factors explaining structural similarity that emerge from this study adds the regions' economic centrality to the factors more traditionally considered, as suggested by the New Economic Geography (Krugman and Venables, 1990; Krugman, 1991).

The remainder of the paper is organised as follows. Section 2 presents previous evidence on this topic. Section 3 presents the model that serves as the reference for this study. Section 4 displays the results obtained for the Portuguese case, based on a spatial disaggregation by regions. Section 5 presents some final remarks.

2. Previous Studies

Previous studies on structural similarity were circumscribed to the national level. Some determinants have been suggested at this level which may explain similarity of productive structures, in part as the outcome of a process of structural convergence. First, Engel effects resulting from income growth might generate increased sectoral similarities between country pairs through converging incomes (Wacziarg, 2004, p. 2-3)[2]. Similar incomes per-capita may also be related to demand similarities inducing similar specialisation patterns, in line with Linder (1961).

Second, convergence in sectoral labour productivity levels, for instance due to technological transmissions across regions, may contribute to increasingly inter-sectoral similarity in terms of labour shares (Wacziarg, 2004, p. 2-3)[3]. Third, convergence in the Heckscher-Ohlin determinants of comparative advantage (such as relative labour abundance) may lead to structural similarity because regions will tend to produce a similar type of goods. Gravity factors such as proximity and the existence of a common border have also been considered as possible determinants of structural similarity. Finally, Barrios et al. (2002) proposed the relative size of the regions assuming that dissimilarity of productive structures increases with differences in size.

With regard to empirical evidence, Barrios et al. (2002), in a study considering 14 EU countries confirm the influence of income per-capita similarity on the degree of structural similarity. In order to quantify the degree of bilateral structural similarity, Krugman's indicator was used. In addition, the study included a proxy intended to capture the difference between countries in terms of market dimension, measured by population. However, this latter variable was not statistically significant.

[2] Analysis of the relative importance of intra-industry trade can be considered as an indirect form of evaluating the degree of structural similarity, given that a larger proportion of intra-industry trade must correspond to a greater structural similarity. Among the studies analysing the importance of different types of trade, see for example Crespo and Fontoura (2004) and Zhang et al. (2005).

[3] Limitations of data have precluded the empirical evaluation of this factor.

The most detailed study on this topic was conducted by Wacziarg (2004). Once again conducting a national-level analysis, the study used, as a measure of the structural proximity between the different countries, the correlation coefficient between the sectoral structures of employment. Two alternative data bases with various levels of disaggregation were used simultaneously: statistical data from the ILO base on 82 countries in the period 1969-1997; and UNIDO information for 128 countries from 1963 to 1997. The former adopts a sectoral disaggregation that comprises 9 sectors, while the latter incorporates 28 sectors.

Similarly to the findings of Barrios et al. (2002), the association between proximity in terms of per-capita income and structural similarity is confirmed. The explanatory robustness of the regressions carried out is, however, limited, particularly when a higher level of sectoral disaggregation is used, the corresponding value of R^2 varying between 0.116 and 0.126.

With the aim of testing the robustness of the results obtained, Wacziarg (2004) performed two additional tests**.** Firstly, the total sample was distributed between pairs of countries belonging simultaneously to the OECD and the rest. However, no significant difference was detected in this case. A second division of the sample was carried out according to geographical area (Asia, Sub-Saharan Africa, Latin America and Europe). However, once again, no significant divergences were observed in the results obtained despite the fact that the explanatory power of the model varied substantially, being particularly weak in the case of Europe, with an R^2 value that did not exceed 0.025.

Wacziarg (2004) also sought to test the influence of endowments similarities. Three variables related to countries' factor endowments (land, capital and human capital) are considered. The evidence obtained permitted the author to confirm the influence of the capital endowment but did not corroborate the impact of land endowment. With reference to human capital, the results diverge, according to which data base is considered. This factor's influence is not significant when the more disaggregated data base is used. Finally, three other variables were also taken into account, namely, the distance between countries, the existence of a common border and the relative dimension of the population. This group of variables shows a significant and positive influence on the degree of structural similarity among the economic areas considered.

The study of De Benedictis and Tajoli (2007) has produced an interesting analysis in respect of the degree of similarity of trade structures, without considering, however, the factors that determine the magnitude of this degree of similarity.

3. The Empirical Model at the Regional Level

In this study, we endeavour to establish what the factors are that explain the similarity in productive structures at a regional scale of evaluation, more specifically, at the Portuguese regional level.

The consideration of this particular level of evaluation primarily implies the need for a large volume of information. Effectively, analysis of the determinant factors of structural similarity among the 275 Portuguese counties gives rise to 37,675 bilateral comparisons. The information used refers to the year 2000.

For the quantification of the structural similarity, we use the Krugman index, which is expressed by the following formula:

$$E_i = \beta \sum_{j=1}^{J} \left| l_{ji} - l_{jh} \right| \quad ; \quad E_i \in \left[0;2\beta \right[\qquad [1]$$

where j represents the sector and i and h the regions.

Let us assume that β = 1/2, so that E_i ranges between 0 and 1. The sectoral structures are measured in terms of employment.

We represent the variable that measures the degree of structural similarity as *Sim*. It should be noted that a higher value of *Sim* expresses a higher degree of structural dissimilarity between the regions compared.

Table 1 presents the average values (by counties) of *Sim*, from 1985 to 2000. The results clearly show a decreasing tendency, revealing a process of structural convergence at regional level in Portugal. See the Appendix for evidence disaggregated by counties in the last year of this period.

Table 1: Structural similarity (by counties) – global average, 1985-2000

Years	*Sim* (average)
1985	0,6510
1986	0,6482
1987	0,6567
1988	0,6552
1989	0,6457
1990	0,6541
1991	0,6534
1992	0,6411
1993	0,6356
1994	0,6361
1995	0,6227
1996	0,6360
1997	0,6281
1998	0,6250
1999	0,6288
2000	0,6145

Taking as a reference the determinant factors of structural similarity mentioned in the previous section, we analyse the influence of six variables on *Sim*, arranged in 3 fundamental groups: (i) gravity variables and the dimension of the region, evaluated by its population; (ii) per-capita income; (iii) factor endowments. We also add a measurement of the economic centrality of the counties, based on economic geography considerations: on the basis of the models of the New Economic Geography (Krugman and Venables, 1990; Krugman, 1991; Fujita et al., 1999), it is possible to predict that more central regions (i.e., closer to economic activity) will possess different sectoral structures to those that characterise the less centrally-located (i.e., more peripheral) regions.

The first group includes three variables, the first of which – *Front* – seeks to capture the influence of a common boundary between regions. This is a dummy variable that assumes the value 1 when the regions in question share a common boundary and 0 otherwise. It is reasonable to suppose that neighbouring regions possess similar sectoral structures of employment, for a variety of reasons that may include similar geographical characteristics, similar behaviour in respect of demand structure and greater factor mobility. Thus, a negative effect is to be expected of the variable *Front* on *Sim*. The second variable in the first group captures the influence of the distance between regions. This variable – *Dist* – is calculated in minutes, based on the distance in kilometers by road, but taking into account differences of speed, depending on the class of road. The speeds correspond to the definitions pre-established in the ROUTE66 program for various classes of road on a journey by car. Since it is likely that regions that are more distant from each other will possess more distinct sectoral structures, a positive effect of *Dist* on *Sim* is expected. The third variable – *Difdim* – aims to measure the difference in dimension (in absolute value) between the regions in question. Each region's dimension is measured on the basis of its population, with a positive effect of this variable on *Sim* being expected.

The second group comprises the variable *Difgdppc*. This variable expresses the difference, in absolute value, between the regions under analysis in terms of per-capita income, with the expectation that those regions that are most similar in this respect will also present the closest structural similarity, based on demand similarities.

The third group, referring to factor endowments, consists of two variables: *DifH* and *DifK*. The former aims to capture the difference between regions in terms of the human capital endowment, expressed as the difference, in absolute value, between regions in terms of the share of the most highly qualified population (i.e., those who have completed at least 10 years of schooling). The expected effect of this variable on *Sim* is positive, since it is reasonable to assume that regions with wide differences in their human capital endowments will also differ widely in terms of their sectoral employment structures. The second variable, *DifK*, measures the difference between regions in respect of their physical capital endowments. Taking as reference the proxy used by Burnside et al. (1995, 1996), we consider the difference, again in absolute value, in per-capita industrial consumption of electricity. A positive effect of this variable on *Sim* is expected.

The final variable considered is *Difcentr*, which takes into account the level of centrality of each region. A positive influence of *Difcentr* on the dependent variable *Sim* is expected. This variable is measured as the difference, in absolute value, in the levels of centrality between the regions under analysis (Crespo and Fontoura, 2006)[4]:

$$C_i = \frac{l_i}{\delta_{ii}} + \sum_h \frac{l_h}{\delta_{ih}}, i \neq h \qquad [2]$$

[4] This indicator is chosen as an attempt to overcome the limitations of the most widely-used version, proposed by Keeble et al. (1988). For a discussion of alternative indicators for the measurement of economic centrality, see, for example, Schürmann and Talaat (2000).

The calculation of C_i calls for the preliminary consideration of a number of questions. The first question refers to the distance function to be used. In spite of the existence of a variety of alternative formulations, we opt for the most frequently used version in the empirical studies: a linear function.[5] Secondly, it is necessary to define the concrete form by which inter-regional distances are to be measured. In this context, we can use, for example, "great circle distances", distances by road in kilometers, distances measured in terms of time, or transport costs. In the present study, we choose to measure bilateral distances between regions in minutes, similarly to the criterion mentioned above with reference to the variable *Dist*.

The third question concerns the location in each region that is established as the reference for the calculation of distances. We have decided in favour of the region's seat of administrative government[6].

The fourth question is related to the means of measuring internal distances. There is currently a large range of methods for this purpose, among which are included the contributions of Keeble et al. (1988), Wei (1996), Nitsch (2000), Wolf (2000), Head and Mayer (2001), Helliwel and Verdier (2001), Brülhart (2001) and Redding and Venables (2004) – which have appeared in the context of analysis of what are known as border effects, as documented in the survey of Head and Mayer (2002).

In the present study, in view of its wide use and ease of calculation, we opt for the measurement method used by Keeble et al. (1988) and Brülhart (2001):

$$\delta_{ii} = \frac{1}{3}\frac{\psi_i}{\pi} \qquad [3]$$

where ψ_i corresponds to the area of region i.

Lastly, the fifth question concerns the variable chosen to capture the economic dimension of each region. GDP, population and employment are among the most frequently used variables. In this study, this dimension is measured by the weight of the region (l_i) in the total employment in the manufacturing industry and services sectors[7].

The sources used to build the variables used in this study are presented in the Appendix.

4. Evidence for Portugal

On the basis of the explanations presented in the prior section, the following model is considered:

$$Sim = f\,(\overset{-}{Front}, \overset{+}{Dist}, \overset{+}{Difdim}, \overset{+}{Difgdppc}, \overset{+}{DifH}, \overset{+}{DifK}, \overset{+}{Difcentr}) \qquad [4]$$

[5] See Keeble et al. (1988) for a discussion of alternative formulations.

[6] As alternatives to this criterion, the most highly populated city is sometimes used, or the city with the greatest concentration of economic activity. In the case of the Portuguese counties, however, the use of either of these criteria would not make any significant difference.

[7] Note that the intention is to measure the degree of proximity relative to economic activity in global terms. Thus, it is reasonable to include the services sector in the calculation of this variable.

in which the signs on the variables indicate the expected effects on the dependent variable (*Sim*).

Taking into account the fact that the dependent variable is restricted to the range between 0 and 1, a logistic specification is adopted. The results obtained are displayed in Table 2:

Table 2: Determinant Factors of Structural Similarity between the Portuguese Regions

	Sim
Constant (C)	0.0413 (0.651)
Front	-0.2887 (-8.615)***
Dist	0.0772 (9.973)***
Difgdppc	0.0021 (0.555)
DifH	0.0081 (1.906)**
Difdim	0.0268 (7.773)***
Difcentr	0.0712 (19.087)***
DifK	0.1227 (47.408)***
N F Adjusted R^2	37675 567.86*** 0.0953

In parentheses are the t- statistics (White heteroscedasticity corrected).
*/**/*** - statistically significant at the 10, 5 and 1 per cent level, respectively.

The evidence presented in Table 2 provides confirmation of the hypotheses raised with regard to the impact of the variables included in the analysis. Indeed, all of the variables considered show the expected sign and only *Difgdppc*, which measures differences in per-capita incomes, is not statistically significant.

However, the result for *Difgdppc* is not surprising, given the small dimensions of the regions analysed. Indeed, the argument favouring an expected relationship between demand similarities and supply similarities (usually considered at the national level) may loose relevance when the distance between regions is small and therefore the trade costs are not relevant to decide where to locate production. Of course this is the case when simultaneously the regions and the country have a small geographical dimension as in the present analysis[8].

[8] As an alternative to the use of per-capita income we introduced the Human Development Index but the variable continued to be non significant.

On the basis of the results obtained, it is possible to verify that the factors that contribute to greater structural similarity between Portuguese regions include the existence of a common boundary, geographical proximity (and economic proximity considering the impact of road networks), proximity in terms of physical and human capital endowments, a greater similarity in terms of market dimension and lastly, a less marked difference with regard to the regions' degree of centrality. Therefore, the most salient outcome to emerge from the results is the importance of elements related to the regions' factor endowments, their dimensions, geographical proximity and their degree of economic centrality.

In order to test the robustness of the results, two further regressions were carried out. Firstly, the variable *Front* was substituted by another dummy variable which assumes the value 1 when the two regions in question belong to the same NUT III. Secondly, in the variables which call for the calculation of distances (*Dist* and *Difcentr*), the distances measured in time (i.e., minutes) were substituted by distances in kilometers. In neither case were relevant qualitative differences found, thus confirming the robustness of the originally obtained results.

A possible limitation of this study is that we have not considered the possible existence of regional policies favouring the location of productive activity in less congested and less developed areas, in order to attain greater internal cohesion. Indeed, Portugal has benefited from the European Regional Development Fund to reduce regional imbalances and from the EU Cohesion Fund introduced in the early 1990s. Together, these funds aimed to assist in the development not only of basic infrastructures in transport and communication, which in part are included in the variable *Dist*, but also social infrastructures, incentives to the business sector and to cross-border cooperation, among other factors that may have facilitated the spreading out of the firms. A principal problem confronting the inclusion of this possible factor is the lack of data at the county level. However, we note, as emphasised by Syrett (1995) and Freitas et al. (2005), that Portuguese regional authorities' policy discretion has been very limited.

5. Final Remarks

This paper has analysed the determinant factors of structural similarity at the regional level in the Portuguese case, by considering 275 regions (counties). The results point to the positive impact of geographical proximity, a common boundary, similar factor endowments (both physical capital and human capital) and similarity in terms of economic centrality and market dimension on the structural similarity of the Portuguese regions.

It is possible that diverging economic activity contributes to real divergence, i.e. divergence in real per-capita income levels[9], whereas structural similarity is expected to aid real convergence (Baldwin, 1999). If this is the case, then the latter three factors

[9] Note that in the context of the endogenous-growth literature, there are theoretical grounds for believing that concentrating industry may be beneficial for real income growth in all regions (Baldwin and Forslid, 1999; Martin and Ottaviano, 1999). Indeed, centripetal forces in the NEG terminology, such as technological spillovers or production externalities, are growth-inducing and, in the long run, it is presumed that dynamic gains of agglomeration of economic activity help to offset the static income losses in regions that lose industry.

provide some interesting guidelines for regional policies aiming to promote real convergence.

While this study is of a static nature, a natural extension of this particular topic would be to explain the process of structural convergence of economic activity at the regional level with an adequate panel data set. Besides, other determinant factors may also be considered, according to the characteristics of the case study.

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Appendix

Sources of the data
Employment: Quadros de Pessoal, Ministry of Employment.
GDP per capita : Ramos (1998)
Human capital: Censos (2001)
Physical Capital: Instituto Nacional de Estatística

Annex on line at the journal Website: http://www.usc.es/economet/aeid.htm

Table A.1 - Structural similarity by counties, 2000

Counties	*Sim*	Counties	*Sim*	Counties	*Sim*
Arcos de Valdevez	0,578	Sabrosa	0,581	Alvaiázere	0,604
Caminha	0,624	Santa Marta de Penaguião	0,592	Ansião	0,632
Melgaço	0,518	Vila Real	0,592	Castanheira de Pêra	0,818
Monção	0,526	Armamar	0,565	Figueiró dos Vinhos	0,696
Paredes de Coura	0,619	Lamego	0,518	Pedrógão Grande	0,533
Ponte da Barca	0,506	Moimenta da Beira	0,566	Aguiar da Beira	0,569
Ponte de Lima	0,593	Penedono	0,589	Carregal do Sal	0,631
Valença	0,508	São João da Pesqueira	0,601	Castro Daire	0,583
Viana do Castelo	0,655	Sernancelhe	0,686	Mangualde	0,717
Vila Nova de Cerveira	0,642	Tabuaço	0,705	Mortágua	0,622
Amares	0,581	Tarouca	0,551	Nelas	0,637
Barcelos	0,727	Alfândega da Fé	0,516	Oliveira de Frades	0,515
Braga	0,669	Bragança	0,507	Penalva do Castelo	0,545
Esposende	0,711	Macedo de Cavaleiros	0,515	Santa Comba Dão	0,555
Terras de Bouro	0,556	Miranda do Douro	0,631	São Pedro do Sul	0,530
Vila Verde	0,654	Mirandela	0,499	Sátão	0,613
Fafe	0,746	Mogadouro	0,563	Tondela	0,634
Guimarães	0,731	Vimioso	0,654	Vila Nova de Paiva	0,808
Póvoa de Lanhoso	0,677	Vinhais	0,513	Viseu	0,549
Vieira do Minho	0,552	Boticas	0,556	Vouzela	0,670
Vila Nova de Famalicão	0,704	Chaves	0,568	Oleiros	0,720
Santo Tirso	0,704	Montalegre	0,537	Proença-a-Nova	0,645
Espinho	0,692	Murça	0,527	Sertã	0,663
Gondomar	0,662	Valpaços	0,512	Vila de Rei	0,516
Maia	0,660	Vila Pouca de Aguiar	0,672	Mação	0,552
Matosinhos	0,554	Águeda	0,657	Fornos de Algodres	0,546
Porto	0,605	Albergaria-a-Velha	0,640	Gouveia	0,691
Póvoa de Varzim	0,658	Anadia	0,601	Seia	0,678
Valongo	0,675	Aveiro	0,643	Almeida	0,728
Vila do Conde	0,613	Estarreja	0,720	Celorico da Beira	0,597
Vila Nova de Gaia	0,586	Ílhavo	0,658	Figueira de Castelo Rodrigo	0,562
Castelo de Paiva	0,623	Mealhada	0,505	Guarda	0,581
Cabeceiras de Basto	0,663	Murtosa	0,636	Manteigas	0,762
Celorico de Basto	0,648	Oliveira do Bairro	0,641	Meda	0,533

Amarante	0,552	Ovar	0,764	Pinhel	0,520
Baião	0,658	Sever do Vouga	0,633	Sabugal	0,546
Felgueiras	0,856	Vagos	0,708	Trancoso	0,521
Lousada	0,741	Cantanhede	0,582	Castelo Branco	0,577
Marco de Canaveses	0,610	Coimbra	0,543	Idanha-a-Nova	0,634
Paços de Ferreira	0,753	Condeixa-a-Nova	0,654	Penamacor	0,523
Paredes	0,771	Figueira da Foz	0,622	Vila Velha de Ródão	0,818
Penafiel	0,662	Mira	0,572	Belmonte	0,873
Mondim de Basto	0,540	Montemor-o-Velho	0,541	Covilhã	0,743
Ribeira de Pena	0,636	Penacova	0,572	Fundão	0,597
Cinfães	0,537	Soure	0,613	Alcobaça	0,664
Resende	0,544	Batalha	0,670	Bombarral	0,621
Arouca	0,690	Leiria	0,580	Caldas da Rainha	0,607
Santa Maria da Feira	0,708	Marinha Grande	0,748	Nazaré	0,629
Oliveira de Azeméis	0,747	Pombal	0,570	Óbidos	0,644
São João da Madeira	0,782	Porto de Mós	0,692	Peniche	0,564
Vale de Cambra	0,688	Arganil	0,587	Alenquer	0,548
Carrazeda de Ansiães	0,544	Góis	0,595	Arruda dos Vinhos	0,596
Freixo de Espada à Cinta	0,625	Lousã	0,640	Cadaval	0,531
Torre de Moncorvo	0,526	Miranda do Corvo	0,676	Lourinhã	0,558
Vila Flor	0,550	Oliveira do Hospital	0,647	Mafra	0,508
Vila Nova de Foz Côa	0,577	Pampilhosa da Serra	0,593	Sobral de Monte Agraço	0,565
Alijó	0,562	Penela	0,532	Torres Vedras	0,560
Mesão Frio	0,635	Tábua	0,628	Cascais	0,629
Peso da Régua	0,555	Vila Nova de Poiares	0,601	Lisboa	0,619

Table A.1 (cont.) - Structural similarity by counties, 2000

Counties	*Sim*	Counties	*Sim*
Loures	0,590	Fronteira	0,697
Oeiras	0,656	Marvão	0,625
Sintra	0,665	Monforte	0,576
Vila Franca de Xira	0,648	Nisa	0,549
Amadora	0,651	Ponte de Sor	0,515
Alcochete	0,681	Portalegre	0,749
Almada	0,578	Alandroal	0,596

Barreiro	0,600	Arraiolos	0,586
Moita	0,584	Borba	0,587
Montijo	0,532	Estremoz	0,547
Palmela	0,741	Évora	0,695
Seixal	0,724	Montemor-o-Novo	0,558
Sesimbra	0,550	Mourão	0,786
Setúbal	0,650	Portel	0,584
Gavião	0,595	Redondo	0,532
Abrantes	0,638	Reguengos de Monsaraz	0,555
Alcanena	0,799	Vendas Novas	0,661
Constância	0,789	Viana do Alentejo	0,542
Entroncamento	0,873	Vila Viçosa	0,743
Ferreira do Zêzere	0,593	Sousel	0,690
Sardoal	0,624	Aljustrel	0,580
Tomar	0,521	Almodôvar	0,628
Torres Novas	0,606	Alvito	0,585
Vila Nova da Barquinha	0,587	Barrancos	0,669
Ourém	0,613	Beja	0,555
Azambuja	0,807	Castro Verde	0,536
Almeirim	0,526	Cuba	0,574
Alpiarça	0,630	Ferreira do Alentejo	0,541
Benavente	0,624	Mértola	0,561
Cartaxo	0,570	Moura	0,527
Chamusca	0,606	Ourique	0,530
Coruche	0,516	Serpa	0,510
Golegã	0,618	Vidigueira	0,627
Rio Maior	0,548	Albufeira	0,562
Salvaterra de Magos	0,550	Alcoutim	0,719
Santarém	0,509	Aljezur	0,572
Odemira	0,558	Castro Marim	0,563
Alcácer do Sal	0,562	Faro	0,562
Grândola	0,640	Lagoa	0,542
Santiago do Cacém	0,517	Lagos	0,501
Sines	0,784	Loulé	0,515
Mora	0,641	Monchique	0,571
Alter do Chão	0,522	Olhão	0,521
Arronches	0,635	Portimão	0,522
Avis	0,699	São Brás de Alportel	0,634
Campo Maior	0,663	Silves	0,582
Castelo de Vide	0,554	Tavira	0,591
Crato	0,615	Vila do Bispo	0,600
Elvas	0,581	Vila Real de Santo António	0,596