

## **Iberian major Regions Interregional Trade across the Border**

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### **Abstract<sup>2</sup>**

Trade flows that one region establishes with other regions in the same country are very rarely analyzed in the economic literature. Even less frequently are the trade relations with other regions in a neighbor country. Based on previous estimates of interregional trade within the Iberian Peninsula, this paper analyses the trade patterns of the four major trading regions: *Madrid*, *Cataluña*, *Comunidad Valenciana* and *Lisboa e Vale do Tejo*. Similarities among them are identified. A sector analysis is performed showing high levels of concentration. Confirming the literature a strong border effect is identified.

**Keywords:** Inter regional, International trade, Portugal, Spain, Border effect

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### **Introduction**

Portugal and Spain are countries with many similarities. Being amongst the oldest nations in Europe, their history together is centuries old. Unfortunately, there have been centuries of distrust, wars and doors closed to good relations between neighbors. And yet they have always been two natural trade partners due to their similarities. Their history is partially common and with very similar paths across centuries. Their closeness is evident not only in history, but also in culture, geography, consumption patterns, gastronomy, etc.

Democratic systems have been established in both countries, almost simultaneously, only in the fourth quarter of the twentieth century. Only then they established development strategies based on European cooperation. These led to recognizing the potential advantages from a close cooperation between the Iberian nations.

The simultaneous integration of both countries in the European Union in 1986, and the following creation of a Common Market and a single currency, has created the conditions to enhance the economic relations between these countries, amongst which trade is one of the main aspects. International trade between Portugal and Spain was one of the most patent aspects of such increase in relations. An overview of this process is shown by *Caetano et al* (1999); *Lopez* (2003) and also in *Caetano et al* (2005). In a wider perspective, not only focusing in trade, *Pires* (2013) also describes the process for market integration after the EU accession.

Both countries participation in the Common Market removed formal barriers allowing for new realities in trade. Exchanges that were usually confined to national borders may now easily be established crossing them. A whole set of interregional trading relations inside the Iberian Peninsula is possible, and need to be fully understood in order to both nations to benefit from its full potential. Companies tend to explore their proximity markets first, and only at a later stage, to explore international markets. Many never take the endeavor of an internationalization process. The novelty from the absence of formal barriers at the border is that the proximity markets are not any more restricted to those in the home country, but also include the neighbor regions in the other country. Between two countries with such a long border, frequently a business partner on the other side is closer than a partner in the country's capital. To what extend are these potential trade flows affected by the existence of a border is defined as the border

effect. Several cases in the literature have demonstrated its existence, e.g. *Helble* (2007); *Ferreira, R. and Mourato, J.* (2011); *Gil-Pareja, Salvador et al* (2006), thus increasing the importance of understanding the specificities of interregional trade across the border.

However, this is a relatively recent subject, and one that suffers from significant problems of data availability. Though there are statistical data of external trade between Portugal and Spain, there is no interregional trade data between regions on different sides of the border. There are not even interregional trade values within one of the counties. This lack of official data has led to almost inexistent research on interregional trade across the border. An interesting overview of existing methods for border effects estimation can be found in *Magerman, Studnicka and Jan Van Hove* (2016).

For the Spanish regions the project C-Intereg started to present regular estimations of interregional trade flows amongst the Spanish NUT II regions including data since 1995. This is presented for example in *Llano et al* (2008) and *Llano* (2004). However, this does not include Portuguese regions, or from any other country than Spain. Therefore this data do not allow assessing the effects that the border has on trade. The only estimation of interregional trade flows covering both Portuguese and Spanish regions that we are aware of, has been presented in *Ferreira* (2005a) and *Ferreira* (2008). These estimations have been carried out for the period of 1990-2000 with an eleven sector classification. Unfortunately, no other estimation has yet been made with most recent data.

This dataset now permits to have an understanding of the cross-border specificities of interregional trade in Portugal and Spain. The present paper focus on the four main trading regions in terms of interregional flows inside the Iberian Peninsula: *Madrid, Cataluña, Comunidad Valenciana* and *Lisboa e Vale do Tejo*. We use as the main data source the database published in *Ferreira* (2005b). The time horizon is thus from 1990 to 2000. Our goal is to search for the aspects in which these regions present common characteristics in their trade patterns, as well as the points in which they distinguish one from another. By choosing the highest trading regions we also aim to understand if this characteristic of theirs implies similarities that distinguish them from the other. By increasing the knowledge on the interregional trade tendencies, we hope to contribute to make fully use of their potential.

This paper is structured as follows: in chapter 2 we present an overview of the methodology used to generate the dataset on which the present paper is based; in chapter 3 we discuss how the four main Iberian trading regions were selected; in chapter 4 we present a geographical analysis of these regions flows; in chapter 5 we present a sectoral analysis and, in chapter 6 we draw some final general conclusions.

### **Data Estimations**

Though we consider that the database used is a solid set of data, we must keep in mind that these are estimations. To carry out further research using these data, the procedures underneath them should be understood. We intend to briefly present them here, only to clarify their strengths and weaknesses. We do not intend to explain them in detail because that is not the goal of this paper. For a further discussion on the estimation methods one should refer to the original document.

When estimating the data, the goal was to generate Origin-Region to Destiny-Region matrices for the interregional trade flows existing in the Iberian countries Portugal and Spain, as if there was no national border. This was done based on the only existing sets of data. On the one hand international trade data for both countries was used. There are official statistics for the trade relations of one region in one country with whole the other country. There is however no data region to region, across borders. On the other hand transport data within each of the countries was used. This allowed for the estimations of flows between regions of the same country.

For estimating trade flows between regions on different sides of the border international trade statistics were used. Having available the exports from each region to the other country, as well as its imports from the other country, the totals in column and row for our matrices were known.<sup>3</sup> In order to obtain trade flow estimation for every pair of regions a doubled constrained gravity model was applied, following the formulation of *Bjurklo* (1995). The friction factor used was the transportation costs, using real market values. The double constraints were the real values of each region exports to the other country and each region imports from the other country.

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<sup>3</sup>This applies only to the sub-matrices exclusively reporting to this group of flows

For estimating trade flows between regions in the same country, freights data were used as a proxy variable for trade. One of the concerns with the usage of freight data as a proxy to trade has to do with how to value such data that are reported in volumes only. This issue is further discussed in the literature, e.g. *Helble* (2007). Not existing any interregional prices to value these transported quantities, the implicit prices in exports to neighbor countries were used. For example, to value the exports from *Cataluña* to other Spanish regions, the implicit prices in this region's exports to both France and Portugal were used. These were considered to be the closer values to interregional flows inside the country.

Finally, the sector classification is a hybrid one. Transport data was classified according to NST/R, while international trade data according to NC. Not all pieces of data were made available at a very high level of disaggregation. Therefore a hybrid classification of eleven sectors that could aggregate both different data sources was used.

#### **Region Classification**

From the estimated flows for all 20 Iberian NUT II regions, 15 from Spain and 5 from Portugal<sup>4</sup>, we sought for those that could be classified as the main regions, according to their relevance in the Iberian interregional trade flows. For such purpose we have analyzed the weight of each region total trade (with other Iberian regions) over total trade among Iberian regions. The results of such analysis are presented in table no. 1. These data refer to the last estimated year of 1999<sup>5</sup>.

We have computed total values for exports and imports<sup>6</sup> of each one of the 20 Iberian regions within the entire Iberian space, and weighted them over the total interregional trade flows in the Peninsula. Our first idea was to use this simple measure to determine the more significant regions. However, this would introduce a bias in our analysis. The fact is that from on first analysis to the whole trade flows, it was evident that the very large majority of interregional trade in this area is confined to national borders. This is to say that Portuguese regions trade almost exclusively with other Portuguese regions, while

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<sup>4</sup> We consider only regions within the Iberian Peninsula. Portuguese and Spanish archipelagos and the Spanish Autonomous cities in North Africa are not addressed in the present paper.

<sup>5</sup>The dataset includes some data for 2000, but not for all sub-matrices.

<sup>6</sup>Throughout this paper we keep the concepts of exports and imports even though we are including trade with other regions from the same country

flows originated in Spanish regions are kept mainly inside Spain. A strong border effect between Portugal and Spain is clearly shown in *Ferreira and Mourato* (2011). Being so, and keeping in mind that Spain represents a much larger economy than Portugal (15 regions vs. 5 is an example of such difference), one must conclude that the Spanish regions would naturally be much more opened due to their larger domestic market, than Portuguese regions. This way, the simple weight of the regions on total trade flows within the peninsula, would bias our results overestimating the role of the Spanish regions.

In a similar way, one could not use the weight of each region on the trade flows with its co-national partners. In such case the Portuguese regions would be overvalued: with a smaller number of regions, the role played by each would increase because there would be a smaller number of regions over which to distribute the importance.

The solution adopted was a hybrid from this last option, that means firstly to compute the weight of each region trade flows over total interregional trade within national borders, and then to correct those weights dividing them by the role that each would have inside the country if trade would be equally distributed among such regions. If trade flows would be equally distributed among the 5 Portuguese regions, we would find each of them being responsible for 20% of trade. In a similar way, an equal distribution of trade would lead to every Spanish region being responsible for 1/15 (6.7%) of total interregional trade within Spain. To this ratio, real regional weight over inverse of national regions number, we have called the Corrected National Weight (henceforth *CNW*)

Based on this ratio, we are considering a particular region to be one of the main regions in the Iberian Peninsula regarding interregional trade, the higher its weight on trade evolving same nationality regions is when comparing to the number of existing regions in that lot. Regions with a Corrected National Weight greater than 1 have higher levels of trade than they would have with an equal distribution within its country's regions. The opposite applies for *CNW* values lower than one.

**Table no. 1.** Regions weight on interregional trade10<sup>3</sup> €

Regions	Exports (X)	Imports (M)	X+M	Weight of region over total Peninsula flows	Weight of region over flows inside the same country	Cor. Nat. Weight
Madrid	107.059.34	47.233.268	154.292.612	16,05%	18,45%	2,77
Cataluña (ES)	56.743.063	61.111.211	117.854.275	12,26%	14,09%	2,11
Comun.V alenc. (ES)	47.998.847	51.362.841	99.361.688	10,34%	11,88%	1,78
LisboaVT (PT)	20.386.338	21.958.526	42.344.863	4,41%	33,88%	1,69
Norte (PT)	16.720.638	17.686.920	34.407.559	3,58%	27,53%	1,38
Centro (PT)	16.403.118	16.900.483	33.303.602	3,47%	26,65%	1,33
Castilla y Leon (ES)	23.910.263	42.330.437	66.240.700	6,89%	7,92%	1,19
Castilla la Mancha (ES)	35.150.371	28.192.138	63.342.508	6,59%	7,58%	1,14
Andalucía (ES)	14.259.711	45.740.773	60.000.484	6,24%	7,18%	1,08
Aragón (ES)	28.163.013	31.128.937	59.291.950	6,17%	7,09%	1,06
P. Vasco (ES)	25.306.171	29.305.219	54.611.390	5,68%	6,53%	0,98
Galicia (ES)	22.948.528	16.819.176	39.767.704	4,14%	4,76%	0,71
Murcia (ES)	15.029.636	16.074.238	31.103.873	3,24%	3,72%	0,56
Navarra (ES)	14.765.741	16.252.629	31.018.370	3,23%	3,71%	0,56
Alentejo (PT)	3.773.849	6.393.994	10.167.842	1,06%	8,14%	0,41

La Rioja (ES)	14.668.854	6.460.582	21.129.437	2,20%	2,53%	0,38
Cantabria (ES)	7.334.408	7.048.967	14.383.375	1,50%	1,72%	0,26
Asturias (ES)	4.159.860	8.987.182	13.147.042	1,37%	1,57%	0,24
Extrem. (ES)	3.729.021	6.881.983	10.611.004	1,10%	1,27%	0,19
Algarve (PT)	2.054.599	2.695.871	4.750.470	0,49%	3,80%	0,19
<b>Total</b>	59.338.542	65.635.794	124.974.337		100,00%	
<b>Total</b>	421.226.83	414.929.580	836.156.412		100,00%	
<b>Total 2</b>	480.565.37	480.565.374	961.130.749			

**Source:** author calculations based on *Ferreira* (2005b) dataset

To establish a dividing line we have considered the value of the Corrected National Weight of 1.5. A higher value would mean that this regions trade is at least 50% higher than it would be with a perfectly proportional distribution of trade. Therefore we have classified 4 of the total 20 regions has being the main regions in the Iberian countries regarding interregional trade within Iberia. These are three Spanish regions: *Madrid*; *Cataluña* and *Comunidad Valenciana*, and one Portuguese region: *Lisboa e Vale do Tejo*<sup>7</sup>.

The analysis presented in the rest of this paper will thus focus on this set of regions.

### **Basic indicators and geographical distribution**

We'll start by an analysis of these four regions basic trade indicators considering their exchanges with other regions in the Peninsula. Original values on the database were initially computed for the period up to 1999. To avoid bias readings emerging from short-term changes in any of the estimated flows, we have computed the majority of the following indicators based on the mean values of the flows for the last three years available: 1997-1999.

<sup>7</sup> According to the current NUT classification the region is named *Lisboa* and it covers a smaller area. In the time horizon of the dataset the region was still *Lisboa e Vale do Tejo*.



In table's no. 2 and 3 we present some basic indicators of trade for these regions trade flows. Namely the weight that trade with regions of the same country represent on each region trade flows, also the neighbor country. We present both the trade balance and the export/import ratio for every region when facing Portuguese regions, Spanish regions and the whole of the two countries.

**Table no. 2.** Regions' weight on interregional trade

	Weight of same country regions (%)	Weight of neighbour country regions (%)
Madrid	98,49	1,51
Cataluña	97,22	2,78
Comun. Valenciana	98,64	1,36
Lisboa VT	82,74	17,26

**Source:** author calculations based on *Ferreira* (2005b) dataset

**Table no. 3.** Basic interregional trade indicators

	With Spanish regions		With Portuguese regions		General	
	Trade Balance	Exports over Imports ratio (%)	Trade Balance	Exports over Imports ratio	Trade Balance	Exports over Imports ratio (%)
Madrid	78.600.881	305	893.227	220	79.494.107	303
Cataluña	-5.366.516	90	1.700.571	380	-3.665.945	93
Comun. Valenc.	-6.946.701	84	326.380	183	-6.620.321	85
Lisboa VT	-4.261.907	21	1.559.117	110	-2.702.790	87

**Source:** author calculations based on *Ferreira* (2005b) dataset

When observing these data, a very interesting conclusion emerges promptly. All regions present much stronger relations with regions from the same country, than with regions from the other Iberian economy. Though not visible from the present table, a similar conclusion can be drawn referring to the other 16 regions not analyzed in this paper. The reading deriving from this observation is a most important one: though both countries have jointly entered the European Union in 1986, though a Common Market has been settled removing most of the existing barriers, the existing trade between Iberian regions is still mainly confined to the national borders of each country. Though physical and fiscal barriers have been moved, the border still represents a huge barrier for trade, probably mainly due to cultural and historical reasons. We thus confirm the results from *Ferreira, R. and Mourato, J.* (2011) that demonstrated a significant border effect diminishing trade between these countries.

From these four regions, *Lisboa* emerges clearly as the most opened one, in terms of percentage of trade with the neighbor economy. This fact however must not be misinterpreted. The large difference in the values for *Lisboa*, when compared with the three other regions here analyzed, are clearly explainable for this being the only Portuguese region here listed. Considering that there are a total of 5 regions in Portugal and 15 in Spain<sup>8</sup>, the exchanges that *Lisboa* settles with 15 Spanish regions (neighbor country) must be significantly higher than the flows reported by each of the Spanish regions. Hence trade relations that *Lisboa* establishes with Spanish regions are relatively more important than flows with Portugal are for any of the Spanish regions

From the observation of the export/import ratios, we notice a similar behavior for the three regions *Cataluña* (CAT), *Comunidad Valenciana* (CV) and *Lisboa* (LVT). In fact, all these present a level of exports almost enough to cover the regional imports. Also these three regions present much better results when facing Portuguese regions than facing Spanish trading partners, reporting positive trade balances towards Portugal, while all three have negative balances with Spain. *Lisboa* emerges as a special case in this group of regions, clearly for being the only Portuguese region in the lot. Having Portugal a structural

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<sup>8</sup>In the Iberian Peninsula, excluding archipelagos and Autonomous Cities on North Africa

trade deficit towards Spain<sup>9</sup>, it is not surprising to observe that LVT presents a very low export/import ratio with Spanish regions. But while both CAT and CV have positive trade balances with regions from the other side of the border (Portuguese ones), and negative with their co-national ones, LVT presents the opposite perspective. It has a positive balance with the same nationality regions (Portuguese ones) while it has a very low performance with areas from the opposite side of the border, even lower than the entire country as a whole<sup>10</sup>.

With this perspective we notice that, although *Madrid* (MAD) presents a different structure, it has some similarities with the LVT case. MAD is clearly a very special case within this group of 4 regions, as well as within the entire Peninsula. Not only it is the largest trading region (presenting the higher CNW in previous section), but also it reports the biggest trade balance values. Exports from *Madrid* to other region cover three times its imports. For both countries MAD has its imports largely covered by exports, differing from the performance of both CAT and CV. Clearly, *Madrid* has a centralizing role in the interregional trade flows in Spain. It is in this perspective that we argue for the similarity between LVT and MAD. The positive trade balance that *Lisboa* has inside Portugal (in spite of the very poor role it has with Spanish regions), when comparing with the performance of CAT and CV inside their national borders, underlines the also centralizing role that LVT has within the Portuguese regions.

Following we present the geographical distribution of the interregional flows of these four main regions. Tables 4 to 7 indicate values individualized per partner region.

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<sup>9</sup>In 1999 the export/import ratio for the Portuguese trade with Spain was approximately 44%

<sup>10</sup> See previous note

**Table no. 4.** Trade Balance per partner region1997-99 averages; 10<sup>3</sup>€

Trading regions	Trade Balance			
	MAD	CAT	CV	LVT
Norte	55.237	300.278	64.858	-479.579
Centro	16.649	127.329	-3.105	-159.962
Lisboa V Tejo	827.137	1.252.734	260.116	
Alentejo	-8.529	8.505	-1.397	1.827.276
Algarve	2.732	11.724	5.907	371.381
Andalucía	16.370.855	2.877.012	2.434.677	-329.854
Aragon	4.700.319	399.597	-188.090	-253.097
Asturias	2.154.406	288.802	114.249	-49.959
Cantabria	879.302	-28.522	-47.621	-38.866
Castillala Mancha	6.747.645	-570.137	-1.540.886	-139.554
Castillay León	13.745.053	669.859	343.246	-287.954
Cataluña	10.352.306		-722.121	-1.252.734
Comunidad Valenciana	7.517.392	722.121		-260.116
Extremadura	1.791.168	320.894	167.190	-102.219
Galicia	4.650.556	-299.212	-311.603	-245.086
La Rioja	457.544	-564.607	-279.765	-41.999
Madrid		-10.352.306	-7.517.392	-827.137
Murcia	2.437.689	419.152	509.569	-49.192
Navarra	1.291.776	258.670	26.889	-129.850
Pais Vasco	5.504.868	492.160	64.957	-254.291
Sub Total Portugal	893.227	1.700.571	326.380	1.559.117
Sub Total Spain	78.600.881	-5.366.516	-6.946.701	-4.261.907
Total	79.494.107	-3.665.945	-6.620.321	-2.702.790

**Source:** author calculations based on *Ferreira (2005b)* dataset

(A positive value means that the region in column sells more to the region in line than it imports from it. E.g. the first cell means that *Madrid* has a trade surplus of 55.237 in its relations with Norte)

**Table no. 5.** Exports/Import ratio per partner region

Trading regions	Export / Import ratio			
	MAD	CAT	CV	LVT
Norte	121	230	149	<b>92</b>
Centro	109	189	<b>97</b>	<b>97</b>
Lisboa V Tejo	449	732	275	
Alentejo	<b>80</b>	131	<b>90</b>	191
Algarve	154	295	280	139
Andalucía	908	275	245	<b>31</b>
Aragon	255	104	<b>95</b>	<b>20</b>
Asturias	670	195	168	<b>13</b>
Cantabria	280	<b>95</b>	<b>81</b>	<b>14</b>
Castillala	179	<b>78</b>	<b>66</b>	<b>17</b>
Castillay León	323	142	126	<b>26</b>
Cataluña	268		<b>94</b>	<b>14</b>
ComunidadVale	271	106		<b>36</b>
Extremadura	574	246	215	<b>34</b>
Galicia	292	<b>85</b>	<b>76</b>	<b>24</b>
La Rioja	170	<b>55</b>	<b>52</b>	<b>13</b>
Madrid		<b>37</b>	<b>37</b>	<b>22</b>
Murcia	367	125	113	<b>21</b>
Navarra	254	114	103	<b>14</b>
Pais Vasco	376	116	105	<b>14</b>
Sub Total	220	380	183	110
Sub Total Spain	305	<b>90</b>	<b>84</b>	<b>21</b>
Total	303	<b>93</b>	<b>85</b>	<b>87</b>

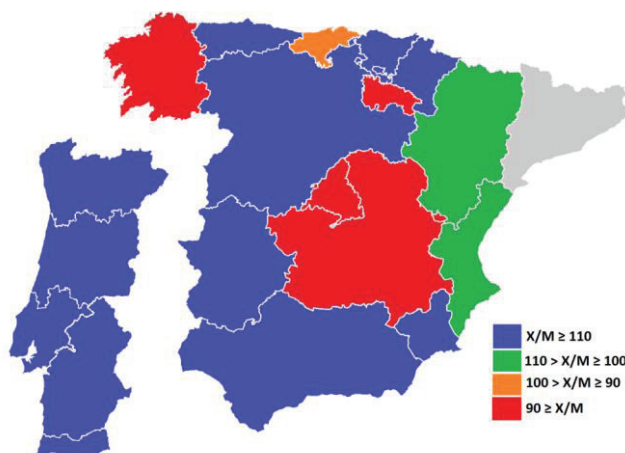
**Source:** author calculations based on *Ferreira* (2005b) dataset

For an easier reading the bold line separates Portuguese regions, above, from Spanish regions, below. X/M ratios minor than 100% are presented in bold.

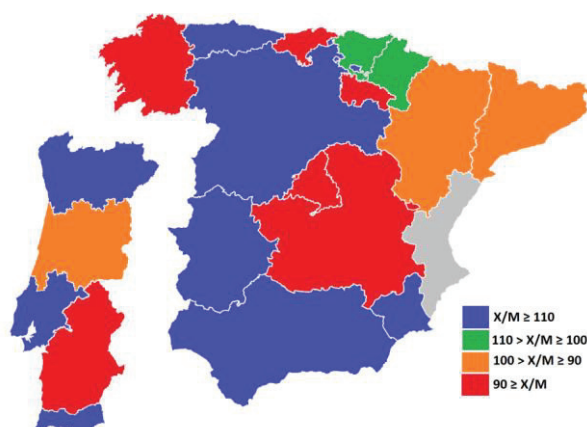
From the analysis of these tables we notice a very interesting resemblance between the geographical trade position of flows for regions CAT and CV. In fact, with a few exceptions, the regions with which they have a positive trade balance (or a negative one) are the same for both.

Not only we must underline that resemblance between *Cataluña* and *Comunidad Valenciana*, also we find that these regions trade position present a common pattern for groups of contiguous regions in different parts of the Iberian countries. These can be observed when introducing those values on regional maps, as in Figures 1 and 2.

**Figure no. 1.** *Cataluña* trade position with different regions



**Figure no. 2.** *Comunidad Valenciana* trade position with different regions



With the information available, both on tables 4 and 5 and on figures 1 and 2 we can clearly note the existence of areas towards which both CAT and CV have similar positions. Facing a very large macro-region composed by all the most distant regions from the French border (Murcia, Andalucía; Extremadura; Castilla y León and Asturias) these two regions present very significantly positive trade positions. The northeast part of the Peninsula (Aragón, CAT and CV themselves, País Vasco and Navarra) is where we find trade balances closer to an equilibrium. In this group, for CAT, though Navarra and País Vasco

belong to the classification of higher X/M ratios are the regions with a lower value (114 and 116) among that group. Finally, a central area in the peninsula, around *Madrid* and North from *Madrid* (*Madrid*, *Castilla-La Mancha*; *La Rioja* and *Cantabria*) is responsible for the trade deficits these two regions have. *Galicia* is an exception not fitting these patterns, though with the same behavior for both CAT and CV

When analysing the flows with Portuguese regions we do not find a so obvious similarity for CAT and CV. However, the very low role of the trade with these regions in the context of total interregional trade within the whole Peninsula (see tables 6 and 7 below) makes the X/M ratio an incomplete measure. Nevertheless, we must note that the only two cases of negative trade balances are the relations of CV with *Centro* and *Alentejo*, though with X/M of 97 and 90, not really contradicting the trend of positive trade with Portuguese regions.

For the capital regions *Madrid* and *Lisboa*, there is no need of a map to clearly view their positions. *Madrid* has a significantly positive trade balance with all regions, except for the *Alentejo* region in Portugal<sup>11</sup>. This trade surplus of *Madrid* is so high that its overall X/M ratio is 303. The lowest value within Spain is 170 with *La Rioja*, though with Portuguese regions we find 109 and 121 for *Centro* and *Norte*.

As for *Lisboa*, we find exactly the opposite. It presents a negative trade balance with all Spanish regions (with an X/M towards Spain of only 21) and half of the Portuguese ones, *Norte* and *Centro*. It only presents a positive trade balance with the two southern regions of *Alentejo* and *Algarve*.

Finally we must take a closer view at the geographical distribution of the trade flows of these four main regions. In order to do so, we present in tables 6 and 7 the weights of each trading region with each of these 4, both over the flows with the whole of the two countries, and over the flows of one country at a time.

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<sup>11</sup> This exception is clearly due to the role of the petrochemicals sector in the Sines area

**Table no. 6.** Regions' weights on each main region total trade

Trading regions	Weights on total regional trade			
	MAD	CAT	CV	LVT
Norte	0,38	0,73	0,40	31,02
Centro	0,25	0,40	0,23	30,31
LisboaVTejo	0,83	1,57	0,69	
Alentejo	0,05	0,06	0,03	15,40
Algarve	0,01	0,02	0,02	6,01
Andalucía	12,95	5,88	7,12	1,66
Aragon	6,82	17,61	8,44	1,00
Asturias	1,85	0,86	0,55	0,17
Cantabria	1,18	0,99	0,55	0,13
Castillala	15,08	4,48	9,17	0,52
Castillay leon	16,52	3,66	3,72	1,30
Cataluña	14,36		28,57	4,33
Comunidadvalen	10,35	22,18		1,46
Extremadura	1,62	0,73	0,56	0,54
Galicia	6,02	3,44	2,78	1,05
La rioja	1,12	1,87	1,10	0,14
Madrid		21,62	20,07	3,42
Murcia	2,70	3,57	10,45	0,20
Navarra	1,88	3,87	2,06	0,45
Paisvasco	6,03	6,47	3,50	0,89
Sub Total	1,51	2,78	1,36	82,74 *
Sub Total Spain	98,49	97,22	98,64	17,26
Total	100	100	100	100

**Source:** author calculations based on *Ferreira* (2005b) dataset

**Table no. 7.** Regions' weights on each main region trade in its own country

Trading regions	Weights on same country flows			
	MAD	CAT	CV	LVT
Norte	24,88	26,17	29,55	37,49
Centro	16,84	14,21	16,70	36,64
LisboaVTejo	54,58	56,61	50,28	
Alentejo	3,16	2,20	2,34	18,61
Algarve	0,54	0,82	1,12	7,26
Andalucía	13,15	6,05	7,22	9,59
Aragon	6,92	18,11	8,55	5,78
Asturias	1,87	0,88	0,56	0,99



Trading regions	Weights on same country flows			
	MAD	CAT	CV	LVT
Cantabria	1,20	1,02	0,56	0,78
Castillala mancha	15,31	4,60	9,29	3,00
Castillay leon	16,78	3,76	3,77	7,53
Cataluña	14,58		28,97	25,10
Comunidadvalencia	10,51	22,81		8,49
Extremadura	1,64	0,75	0,57	3,13
Galicia	6,12	3,54	2,82	6,08
La rioja	1,14	1,93	1,11	0,83
Madrid		22,24	20,34	19,81
Murcia	2,75	3,67	10,59	1,15
Navarra	1,91	3,98	2,09	2,61
Paisvasco	6,12	6,65	3,55	5,14
Total	100	100	100	100

**Source:** author calculations based on *Ferreira* (2005b) dataset

For an easier reading the bold line separates Portuguese regions, above, from Spanish regions, bellow.

Weights on total regional trade represent the weight that each partner region has on the reporting region total interregional flows within the whole of Portugal and Spain. For example, the Portuguese region *Norte* is the partner of *Madrid* in 0.38% of total flows that MAD settles with all the regions in both countries.

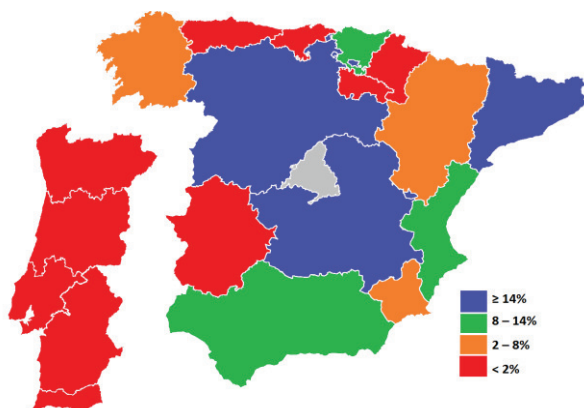
Weights on same country flows represent the weight that each partner region has on the reporting region interregional flows with the set of regions from the same country as the partner region. For example, the Portuguese region *Norte* is the partner of *Madrid* in 24.88% of the flows that MAD settles with Portuguese alone.

Two main ideas emerge from the observation of these figures. The first was already mentioned above, is the very low role of the crossing national border interregional trade flows. Indeed the border still represents a very strong barrier to trade, confirming the existence of a major border effect. The second is that these flows are highly concentrated on a very few number of regions. This can be further illustrated in figures no. 3 to no. 6.

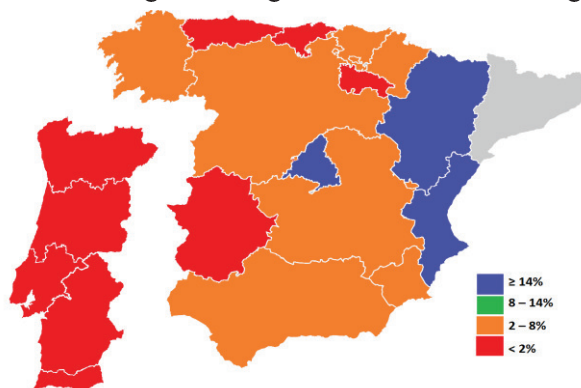
What we can observe is that both CAT and CV have, again, a very similar geographical distribution of their trade flows, highly concentrated on the closer regions and Madrid. The Spanish capital presents a higher distribution of its flows, though with a high emphasis

on both *Castillas*, probably due to proximity issues, and the Mediterranean regions.

**Figure no. 3.** Regions weight on *Madrid* interregional trade

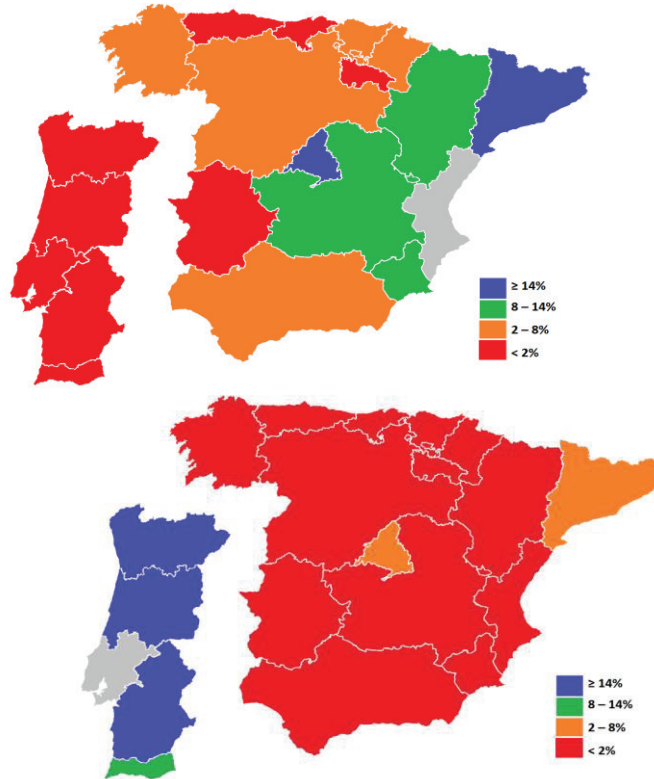


**Figure no. 4.** Regions weight on *Cataluña* interregional trade



For all these three regions (MAD, CAT, CV) there is a group of smaller regions which have very low weights on trade flows. These are mainly concentrated on the Northern part of the Peninsula, namely *Asturias*, *Cantabria* and *La Rioja*.

**Figure no. 5.** Regions weight on *Com. Valenciana* interregional trade



**Figure no. 6.** Regions weight on *Lisboa* interregional trade

The role of the border between the two countries is here interesting to observe. On the one hand there is no doubt that it still makes a very strong barrier for trade. It is very easy to observe that for each one of the three Spanish regions here analyzed, all Portuguese regions lay on the lower than 2% weight regions. The whole of Portugal itself would be classified as that except for *Cataluña* for which the entire country represents 2.78% of its trade flows within the Iberian countries. For *Lisboa e Vale do Tejo*, the trade flows are concentrated inside Portugal, with the exceptions of *Madrid* and *Cataluña*.

On the other hand we see that there are some particular cases of crossing border flows that already put aside some other in border flows, namely for CAT and LVT. For example, when referring to the Spanish

*Cataluña* trade flows, we observe that the Portuguese *Lisboa e Vale do Tejo* accounts for 1.57% of the trade flows, while three Spanish regions present much lower values of 0.86%, 0.99% and 0.73% for Asturias, Cantabria and Extremadura. Also for CAT, the Portuguese region *Norte*, is as much important as the Spanish Extremadura. Similar situation we find for the Spanish *Comunidad Valenciana*, for which the Portuguese LVT is, again, a higher trading partner than the Spanish *Asturias*, *Cantabria* and *Extremadura*.

All this leads us to the conclusion that the border still represents a strong barrier for trade. But the low levels of trade that the Portuguese regions have with the main Spanish regions are partly due to other factors, as distances and regional differences.

### **Sector Distribution**

In order to have a better view of this hardly known reality, which is the interregional trade within the Iberian countries, we want to provide one analysis over the sector distribution of the interregional trade flows for each of the four regions we are studying.

In table no. 8 we present the sector weights on exports and imports that each region has facing the entire Peninsula.

The first conclusion emerging from this table is that there is indeed a high resemblance between these 4 regions, in what concerns their patterns of trade. However, we note that *Madrid's* exports present clear differences. We find that there is a group of three sectors with a clear preponderance in exports for these regions: Textiles, Vehicles and Other. The main difference for *Madrid* is that this last sector assumes a very strong leading position.

In what concerns the Import distribution we encounter the same three sectors leading trade, even with greater roles in most cases. The sectors in which these regions most export are also those with greater imports, and with negative trade balances in most of these cases. Exception is for *Lisboa* and *Cataluña* in the sector of Vehicles; for CV in the Textiles and for *Madrid* in the Other.

**Table no. 8.** Sector weights on each region's X and M to/from Portugal and Spain (%)

	Exports				Imports			
	MAD	CAT	CV	LVT	MAD	CAT	CV	LVT
S1 - Animal and Vegetal Products	0,45	3,80	6,06	4,04	4,36	3,94	5,02	5,52
S2 - Agro-food products	2,22	8,53	6,71	10,94	11,17	5,03	8,43	11,72
S3 - Wood, cork, and derivate	0,10	0,38	1,69	0,95	0,81	0,69	1,64	1,98
S4- Textiles, clothes and leather	18,77	38,47	43,05	23,80	42,35	40,41	38,62	27,91
S5 - Mineral products and gas	0,59	0,58	1,75	9,18	1,79	0,56	1,34	3,39
S6 - Metals and metal products	0,75	3,49	3,30	2,62	4,75	3,22	3,42	4,60
S7 - Celluloses	0,45	0,52	0,55	0,75	0,31	0,42	0,26	1,48
S8 - Chemical Products	1,16	6,45	4,09	2,02	2,75	2,88	3,83	4,97
S9 - Glass and Ceramics	0,19	0,57	0,85	0,49	0,55	0,52	0,47	1,50
S10 - Vehicles and Machines	8,41	19,52	9,63	31,08	14,09	13,19	10,30	21,28
S11 - Other	66,90	17,69	22,31	14,14	17,07	29,14	26,68	15,66

**Source:** author calculations based on *Ferreira* (2005b) dataset

These values show similarities between the main trading regions in the Iberian countries, but also suggest the existence of high indexes of concentration of trade. To verify this level of concentration we have computed the *Herfindahl-Hirschmann* index of concentration, with the normalization used by the UNCTAD<sup>12</sup>, for the average trade flows 1997-1999. Those results are present in table no. 9.

<sup>12</sup> United Nations 2003

**Table no. 9.** Regional Trade Concentration Indexes

	Export Concentration Index	Import Concentration Index
Madrid	0,57	0,28
Cataluña	0,26	0,31
ComunidadValenciana	0,29	0,28
Lisboa	0,20	0,16

**Source:** author calculations based on *Ferreira* (2005b) dataset

From these indexes we notice that *Lisboa e Vale do Tejo* is the region with the lowest levels of concentration, both in exports and imports. In what concerns the concentration of trade flows, once more we find strong resemblances in the results for both regions *Cataluña* and *Comunidad Valenciana*. In imports *Madrid* also presents a similar, not too high index.

The value of the *Madrid's* export concentration must here be emphasized. Analyzing simultaneously the data in table 8, we can easily conclude that this high level of concentration is caused by the 66.9% weight of Sector 11 - Others on this region's exports. At the moment we cannot point out a plausible reason for this. The fact that we could not get a further detailed disaggregation of our base data is preventing a deeper analysis of the regional trade patters vis-à-vis other regions.

Finally, the concentration levels for the trade flows of *Lisboa* deserve a further analysis. On a research made by *Caetano et al* (2000)<sup>13</sup> on the *International Specialization of the Portuguese Regions* in the 1990s similar indexes were computed for LVT, but referring to external trade, not interregional trade, nor limited to the Iberian Peninsula. The levels of concentration obtained in that case were around 0.4 in exports, and 0.3 in imports<sup>14</sup>. This leads to the conclusion that there are clear differences in the patterns of trade of these regions (in the particular case only LVT) when we focus on international trade and when we focus on interregional trade within the Iberian countries<sup>15</sup>. In

<sup>13</sup>Caetano (2000), pp. 12-14

<sup>14</sup>Though it is not directly comparable with our case as Caetano's values were computed for the year 1998, while we are using averages for the period 1997-99.

<sup>15</sup> A similar conclusion has been reached in *Ferreira* (2005a) from the analysis of Intra-Industry Trade levels in international trade and in interregional trade.

this particular issue it is interesting to note that the concentration indexes are higher in international trade flows than in interregional ones. This could be quite expected due to the nature of these flows, being the international ones more difficult to establish, and more uncommon, therefore more concentrated in a smaller number of businesses.

### Conclusions

This paper pointed out the main characteristics of the regions that we have classified as the main trading regions inside the Iberian Peninsula. These are *Madrid*, *Cataluña*, *Comunidad Valenciana* and *Lisboa e Vale do Tejo*. It should be kept in mind that the time frame analyzed is 1997-1999, last years for which there are any estimates for the interregional trade flows between regions of Portugal and Spain.

We have found that there are several resemblances between these four, on their patterns of trade inside the Peninsula, mainly between *Cataluña* and *Comunidad Valenciana*. In these common characteristics we encounter a spatially differentiated trade position towards groups of regions in separate areas of the Peninsula. While there are negative or null trade balances with the center and northeast of the Peninsula, they have very positive trade balances with the west side.

In this aspect *Madrid* and *Lisboa* are particular cases. The first being by far the largest trader and presenting positive trade balances with all regions in the Peninsula, with the curious exception of *Alentejo* (PT), which is one of the poorer regions. The second, though representing a central role inside Portuguese regions, has negative balances towards all regions in both countries, with the exceptions of *Alentejo* and *Algarve*.

There was also noticed that these regions have their interregional trade flows highly concentrated towards a group of main regions. Again *Cataluña* and *Comunidad Valenciana* present very similar patterns, mainly centered in the nearby regions and *Madrid*. *Lisboa* has its flows highly concentrated in the other Portuguese regions, while *Madrid* is the one which presents a higher concentration. In all cases, there are a few smaller regions with which trade relations are almost insignificant for these 4 main regions.

This paper has also shown that the role of the national border is quite significant. On the one side it still represents a de facto strong barrier to trade, with trade values with the entire other country being

almost insignificant for some regions (mainly the Spanish ones due to the different countries' dimensions). This is much consistent with the literature that shows significant levels of border trade for these two countries. On the other side, we also notice that there are several cases of regions that encounter a stronger trading partner in a specific region of the other country than some of its compatriots. This indicates that cross-border trade relations, not only have a full potential, but also are emerging.

On the sector distribution of the interregional trade flows, we have found very strong similarities between the patterns for these regions. They all present the same sectors on which they strongly concentrate both exports and imports, and with similar values for all. The sector of textiles, clothes and leather is dominant in the interregional trade of these four regions. Regional trade concentration indexes were computed, showing that *Madrid* is amongst these four regions, the one concentrating the most of its flows in one single sector (others in exports; textiles, clothes and leather in imports). *Lisboa* is the one region with the lowest concentration level, and, the one for which vehicles and machines appears in the leading role in exports.

But our strongest conclusion is that there is a very wide room for increasing interregional trade relations amongst Iberian regions, with benefits for both countries. The analysis has shown that trade relations with regions on the other side of the border are still incipient when compared with the flows between regions within the same country. Nevertheless some cross-border relations are getting established. Some regions, as for example *Cataluña* already find, on the other side of the border, regions with which to establish exchanges, greater than some closer regions on their own country. Other regions and businesses could explore this potential

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