HISPANO-LUSITANIAN MARKET AREAS IN 1997[1]

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HISPANO-LUSITANIAN MARKET AREAS IN 1997

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ABSTRACT

Market areas are geographical zones with an economic sense that do not have other more commonly used territorial divisions, such as towns, provinces or regions. The Lawrence R. Klein Institute experience in actualising the Spanish Retail Trade Atlas allows the authors to analyse the market areas located in the Hispano-Lusitanian frontier as well as to highlight the main applications derived from the knowledge and actualisation of the consumer retail flows, specially the ones that take place between different regions or countries. These applications take into account not only retailing but also another economic activities relating with market attraction areas. Moreover, we will also analyse which retailing firms are interacting in both markets.

Key Words: Retail Trade Atlas, Retailing, Market Area/Sub-Area, Head of Market Area/Sub-Area, Direct Gravitation Zone, Spatial Interaction Models.

I. INTRODUCTION

Intermetropolitan market areas are geographical zones defined by consumer movements over space -retail flows- from their origin municipalities towards a head town, to do the main shopping. These retail trade areas own an economic sense that do not have other more commonly used territorial divisions, such as towns, provinces or regions.

In 1931, Professor Reilly, of Texas University, was the first in tackling the delimitation market problem. Based on the Newtonian law of gravitation, Reilly is the precursor of the "gravity" type of spatial choice models commonly used today. Later, many researchers have followed his discovering, opening an important path in geographical marketing: Christaller (1935), Applebaum (1961), Huff (1963), Jones and Mock (1984), Fotheringham and O'Kelly (1989), Rust and Donthu (1995), etc.

In 1963, the Spanish Chamber of Commerce published the "1963 Spanish Retail Trade Atlas" which divided the national territory into 101 retail areas and 170 retail sub-areas. Since 1992, the **Lawrence R. Klein Institute** –Autónoma University of Madrid-actualises the Spanish Retail Trade Atlas and determines regional trade areas and sub-areas, using spatial interaction models and survey. Recently, this Institute has elaborated the **"1998 Spanish Trade Yearbook"**, in which are estimated the Spanish retail trade flows referred to July 1997. At this date, there were 73 retail areas and 207 sub-areas.

This work focuses on the **estimation process** developed by the Lawrence R. Klein Institute in determining intermetropolitan market areas using **spatial interaction models and survey.** We will study those areas that have a common border with Portugal, which are actually determined as cut by the frontier, considering this one as a fictitious barrier. In this paper, we estimate the real dimension of the Spanish market areas situated in the border with Portugal. We also determine and analyse the **Portuguese market areas,** as a beginning of a possible Portuguese Retail Trade Atlas. This work would be very interesting in Portugal, at a time of expansion of major retail outlets and new means of communication.

We also want to highlight the main **applications** derived from the knowledge and actualisation of the consumer retail flows. Before developing this process, some important concepts must be clarified.

II. THE CONCEPT OF INTERMETROPOLITAN MARKET AREAS

Intermetropolitan **Market Areas** are sorts of economic retailing provinces different from the well-known political-administrative divisions such as provinces, autonomous communities, regions, etc. Therefore, in the Spanish Retail Trade Atlas context is possible to find a group of municipalities named retailing heads, which attract another proximal municipalities, because of their commercial equipment, drawing market areas. According with Reilly (1931), Christaller (1935), Lösch (1954) and another researchers, this Spanish Atlas considers market areas as large geographic extensions defined by the consumer flows moving from their origin municipalities to a final one –central town or **Head of Market Area**- to do their main shopping.

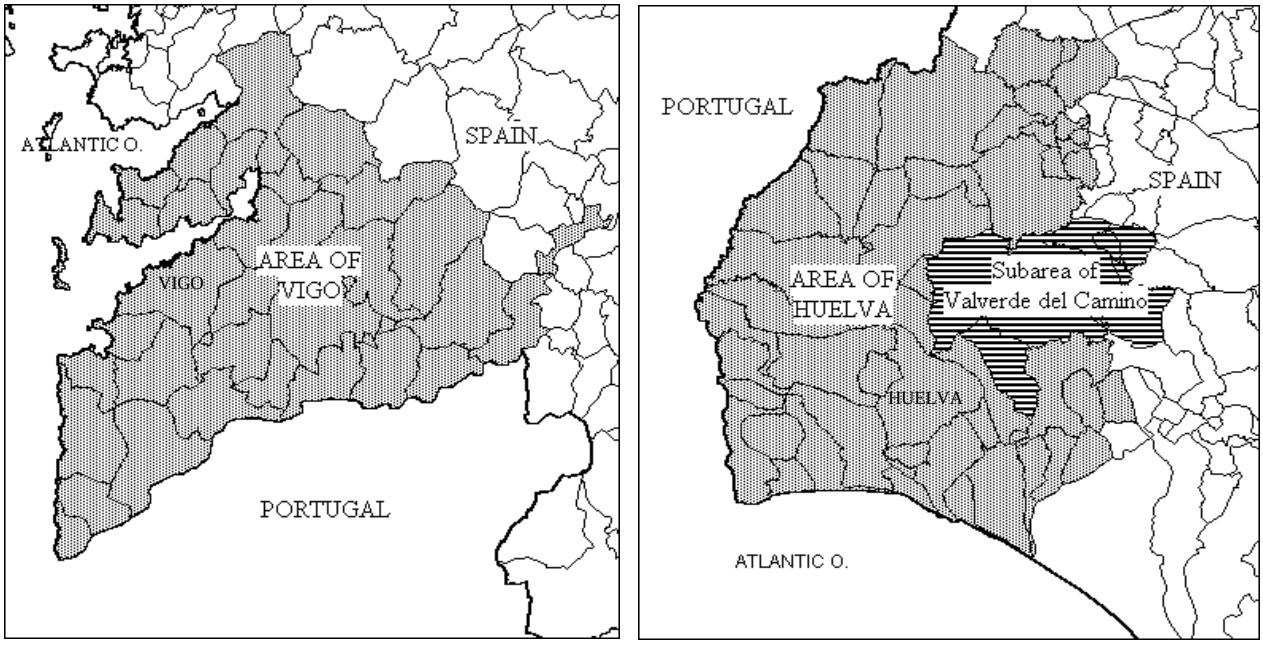
Consequently, a market area can be defined, as "the territorial extension constituted by a number of municipalities whose populations do their main shopping preferentially in a

central or head town included in this area" (Chasco, 1988). This main shopping is constituted by all kind of non-common consumer items, which are not considered as basic necessities, including food articles expended in hypermarkets. This concept was developed by Professor Tagliacarne (Tagliacarne, 1962), who inspired and directed the elaboration of both the "1961 Italian Retail Trade Atlas" and the "1963 Spanish Retail Trade Atlas".

Intermetropolitan market areas can contain none, one or more **Market Sub-Areas**. They are geographic regions which populations do some shopping in a certain urban centre, called **Head of Market Sub-Area**. Therefore, the head of area, because of its better commercial equipment also attracts the whole sub-area.

In Table 1, we have selected two Spanish retail trade areas –Huelva and Vigo-, which are situated in the frontier with Portugal. The **Area of Huelva** has only one Sub-Area -Valverde del Camino-, whose population do their main shopping in the municipality of Valverde del Camino. They also go to the municipality of Huelva to purchase specialised goods, which must be selected more carefully. On the contrary, the **Area of Vigo** has not any market sub-areas, so all its population do the shopping directly in the head of area, the city of Vigo.

Table 1:
Spanish Market Areas of Vigo and Huelva.



Source: Lawrence R. Klein Institute and MapInfo software.

The set of municipalities whose population goes directly to the head of area, to do the shopping is called **Direct Gravitation Zone**. Therefore, the head of area –the municipality of Vigo- and the direct gravitation zone, forms the Area of Vigo. On the other hand, the head of area –the municipality of Huelva-, the Sub-Area of Valverde del Camino and the direct gravitation zone, forms the Area of Huelva.

The delimitation of the retailing areas and sub-areas and the study of their competing interaction over territorial space can be realised by some more or less sophisticated techniques and models. These models have diverse functional forms and several endogenous and exogenous variables, so that it is possible to distinguish between different groups of "families" of delimitation market areas (Chasco, 1997).

It is well-known the procedure devised by Applebaum (1961) for constructing primary trade areas from customers spotted on a location map or the classical central place theory, based on the nearest-centre hypothesis. **'Reilly's law of retail gravitation'** (1931) considers not only distance but also attractiveness of alternative shopping opportunities. **Huff** was the first to use a utility function and introduced the spatial interaction models to explain consumer behaviour. They argued that consumers rate alternatives based on their evaluation of the total utility of the store and not merely on its location.

Huff's model is a particular case of the discrete-choice models known as multinomial logit (McFadden, 1974). Both models satisfies the so-called 'Independence of Irrelevant Alternatives' (IIA) property, that is, the ratio of the probabilities of an individual selecting two alternatives is unaffected by the addition of a third alternative. While this may be reasonably representative of certain aspatial choice situations, it is very unlikely to occur in spatial choice because of the fixed locations of spatial alternatives. The **competing destinations model** (Fotheringham and O'Kelly, 1989), derived from purely spatial considerations, provides a way of overcoming some problems with the logit and nested logit models that arise from the transference of essentially aspatial theory to the spatial realm.

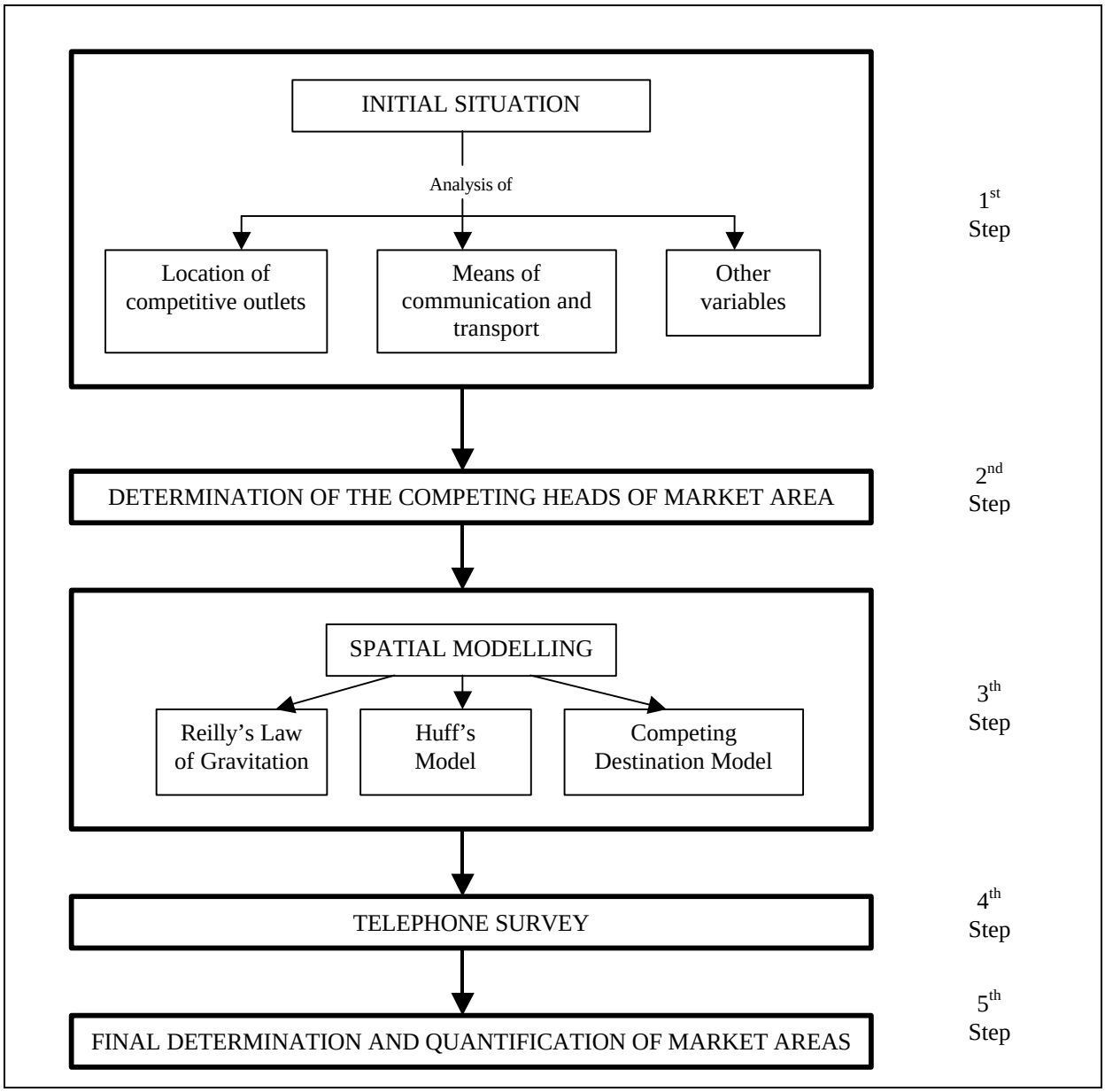
III. HISPANO-LUSITAN MARKET AREAS ESTIMATION PROCESS

Next, it is going to be presented the L.R. Klein Institute market area estimation process. In Table 2, we can appreciate 5 steps in the process. First of all (1st step), we have to analyse certain variables of the study region: commercial equipment, means of communication, disposable personal income, etc. Once it is determined the competing heads of market areas (2nd step), some spatial interaction models must be applied in step 3 –Reilly's gravity model (Reilly, 1931), Huff's multiplicative model (Huff, 1964) and Competing Destinations Model (Fotheringham and O'Kelly, 1989). The situation described by models is finally outlined by telephone survey (4th step), which takes place only in certain zones in doubt. In step 5, we have to decide the shape of the market areas caused by the interacting competing heads, as well as to quantify their magnitude with some statistical measures.

III.1. Initial situation (1st step)

In order to size up the situation, it is necessary to carry out a research of some outstanding characteristics of the study area, at least these two ones: commercial equipment and means of communication (roads and railways). In our case, we have to analyse the Hispano-Lusitanian frontier zone, its heads of market areas and its main roads and motorways. The L.R. Klein Institute estimates the Spanish retailing heads; the Portuguese ones must be detected.

Table 2:
L.R. Klein Institute Market Areas Estimation Process



III.1.1.Location of competitive outlets

Portuguese head of area municipalities can be detected by locating in a map the main retail outlets, particularly those that exert a special attraction over consumers: shopping centres, hypermarkets, department stores and big supermarkets. Afterwards, according to some geographical characteristics, it will be possible to choose those municipalities considered as retailing attraction heads. In Table 3, we have selected the frontier towns that own at least one of the previous main retail outlets.

As of the 71 Spanish and 38 Portuguese frontier localities, we will have to detect the head of area municipalities, in view of their commercial equipment and their relative geographical position. It will be exposed in step 2.

Table 3:
Hispano-Lusitanian frontier localities with at least one of main retail outlet, ordered by Spanish provinces and Portuguese districts.

Spain		Portugal	
Province	**N. localities with main outlets**	**District**	**N. localities with main outlets**
Huelva	19	Faro	10
Badajoz	16	Beja	1
Cáceres	9	Évora	3
Salamanca	8	Portalegre	2
Zamora	4	Castelo Branco	5
Ourense	8	Guarda	2
Pontevedra	7	Bragança	2
		Vila Real	3
		Braga	6
		Viana do Castelo	4
Sum	**71**	**Sum**	**38**

Source: Asociación Nacional de Centros Comerciales, Distribución Actualidad, Associaçao Portuguesa de Centros Comerciais, Associaçao Portuguesa de Empresas de Distribuçao (APED).

III.1.2.Means of communication and transport

Other relevant variable is **geographical distance,** measured by the available means of communication, specially **roads and motorways**. Travelling by car is more and more the principal mean of transport used by consumers to do the shopping substituting railway. That is why we have analysed the most important roads communicating Spain with Portugal.

The first obvious thing is the evident **lack of communication** between both countries, also hardly connected by road. There is not any border passage joint by a two-side motorway, though we can find three one-side ones: with motorway in Portugal, Faro-Huelva road and with motorway in Spain, both Elvas-Badajoz and Viana do Castelo-Vigo roads. Besides, it is possible find some border roads considered as "national roads" (A roads) connecting Beja-Seville, Portalegre-Cáceres, Guarda-Salamanca, Bragança-Zamora and Vila Real-Ourense. In the other side, there is a great deal of B roads and important isolated extensions in an approximately 800 km. frontier line that makes difficult international consumer flows and communication in general.

III.2. Determination of competing heads of market area (2nd step)

In Table 4, we present the Spanish heads of market area existent at 1st July 1997, as it has been estimated in the "1998 Spanish Trade Year-Book". According with last considerations about main retailing locations and means of transport, it has been estimated the possible Portuguese frontier heads of market area. Table 4 also contains the sales surface corresponding to the whole of the aforesaid retail outlets -shopping centres, hypermarkets, department stores, big supermarkets- situated in each retailing head municipality.

As we can see, there are **9 Spanish heads** of area located in the border with Portugal, of which Plasencia, Ciudad Rodrigo and Vigo are not capital cities. In the other hand, it is

possible to distinguish **10 Portuguese market heads** in the frontier with Spain, of which three are not capital cities: Portimao-Albufeira, Mirandela and Chaves. Portimao-Albufeira constitutes a **two-headed market area**, which consists of two municipalities exerting a combined attraction over the consumers living in the surrounding municipalities, because of its proximal location.

Table 4:
Hispano-Lusitanian head of market area municipalities located in the frontier of both countries.

Spanish frontier heads		Portuguese frontier heads	
Municipality	**Sales Surface (M2)**	**Municipality**	**Sales Surface (M2)**
. Huelva	55.319	. Portimao-Albufeira (Faro)	31.125
. Badajoz	55.270	. Beja	2.628
. Cáceres	41.689	. Évora	8.725
. Plasencia (Cáceres)	7.320	. Portalegre	4.082
. Ciudad Rodrigo (Salamanca)	2.720	. Castelo-Branco	12.805
. Salamanca	44.054	. Guarda	4.831
. Zamora	30.562	. Mirandela (Bragança)	7.314
. Ourense	28.989	. Bragança	3.275
. Vigo (Pontevedra)	92.135	. Chaves (Vila Real)	4.406
		. Braga	96.747

Source: Asociación Nacional de Centros Comerciales, Distribución Actualidad, Associaçao Portuguesa de Centros Comerciais, Associaçao Portuguesa de Empresas de Distribuçao (APED).

III.3. Spatial modelling (3rd step)

Once detected the competing retailing heads, we can apply spatial interaction models to determine the **geographical extension** of their market areas. Spatial interaction models (or gravity models, as they are often called) are based on empirical analysis of the spatial pattern of consumer shopping in the study area. This kind of models has their origin in the Reilly's Law of Retail Gravitation.

3.1. Reilly's Law of Retail Gravitation

The notion that agglomeration tends to increase the attractiveness of stores is key to Reilly's "law" of retail gravitation (Reilly, 1931). The focus of Reilly's law is the intermetropolitan trading area boundaries between neighbouring cities in a region, rather than the trade area boundaries of individual stores. Based on the Newtonian law of planetary attraction, the law argues that the proportion of retail trade attracted from intermediate towns by two competing urban areas is in direct proportion to their population and in inverse proportion to the square of the distances from those cities to the intermediate towns.

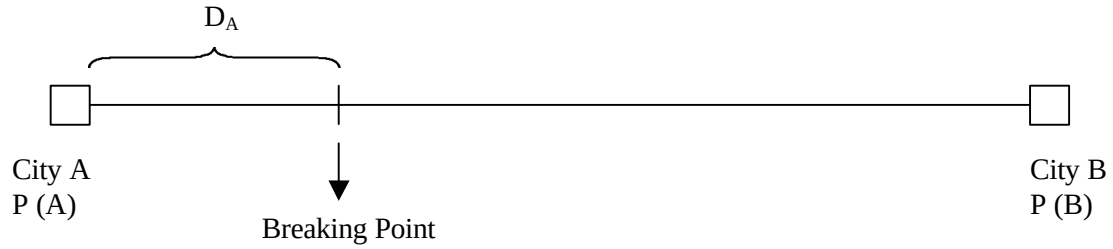
To demarcate trade area boundaries, Reilly's law is often expressed as the "breaking point" formula popularised by Converse (1949). As illustrate in Table 5 the breaking point is the point between two cities A and B such that all consumers to the left of the point patronise retail facilities in one city and all consumers to the right patronise facilities in the other. If the

nearest-centre principle were being used, the breaking point would simply be halfway between the two cities. However, according to Reilly's law, the breaking point is where the relative attractiveness of the two cities is equal. This attractiveness is measured by two kind of variables: a "mass" variable –Population-, which exerts positive attraction over consumers and a "friction" variable –Distance-, which discourage them from moving.

Table 5:
Illustration of Reilly-Converse's Breaking-Point formula.

$$D_A = \frac{D_{AB}}{1 + \sqrt{\frac{P(B)}{P(A)}}}$$

where: D_A: Distance from city A to breaking point
D_{AB}: Distance between cities A and B
P (A): Population of city A
P (B): Population of city B.



Source: Location Strategies for Retail and Service Firms (Ghosh et al., 1987).

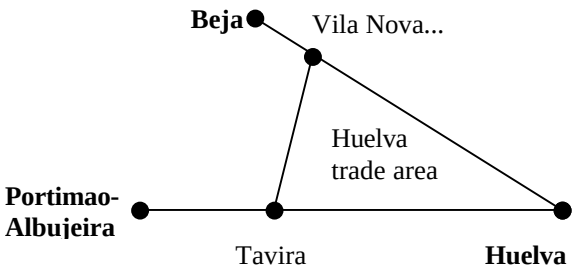
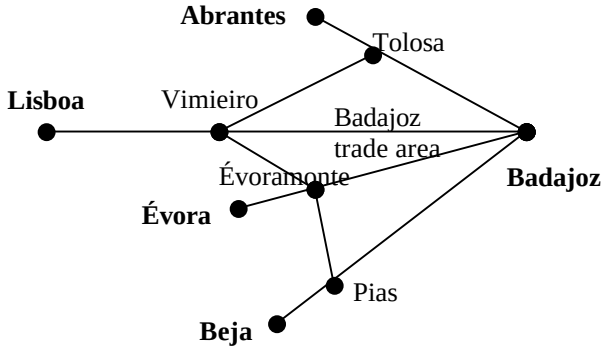
Mass attraction variable is expressed by measures of **size** of the towns: **population** –as it was in the original Reilly's law- or **sales surface** (square metres). We have used this last one to apply Reilly's law to Hispano-Lusitanian frontier market heads (Table 6).

Table 6:
Breaking points estimation of the Hispano-Lusitanian frontier market heads.

Town A	Total Sales Surface of A (M2)	Town B	Total Sales Surface of B (M2)	D_{AB} (Km.)	D_A (Km.)	Breaking Point
Huelva	55.319	Beja	2.628	171	140	Vila Nova de Sao Bento
		Portimao-Albufeira	31.125	175	100	Tavira
Badajoz	55.270	Beja	2.628	171	140	Pias
		Évora	8.725	99	71	Évoramonte
		Lisboa	520.483	244	60	Vimieiro
		Abrantes	12.805	181	122	Tolosa
Zamora	30.562	Mirandela	7.314	201	135	Santa Comba de Rossas
Vigo	92.135	Braga	96.747	138	68	Caminha

In delineating the entire trading zone of a city, the breaking point between the city and its neighbours **in several directions** must be found as illustrated in Table 7 with Huelva and Badajoz Spanish market heads.

Table 7:
Estimating the Huelva and Badajoz trade areas by the breaking point method.

Huelva trade area estimation	**Badajoz trade area estimation**
	

3.2. Huff model

To complete this point of view, we have also applied Huff model. Huff argued that when consumers have a number of alternative shopping opportunities, they may visit **several different stores** rather than restrict their patronage to only one outlet. Each store within the geographic area with which the consumer is familiar has some chance of being patronised. Thus, Huff conceived trade areas to be **probabilistic** rather than deterministic, with each store having some probability of being patronised. This one is positively related to the size of the outlet and decreases with distance.

Huff (1963) was the first to propose a spatial-interaction model for estimating retail trade areas. He suggested that the utility of a store depends on its size (S) and distance (D). To determine the probability of a consumer visiting a particular outlet, Huff followed the choice axiom proposed by Luce (1959). Luce's axiom postulates that the probability of a consumer visiting a particular store (P_{ij}) is equal to the ratio of the utility of that store (U_{ij}) to the sum of utilities of all the stores considered by the consumer.

$$P_{ij} = \frac{U_{ij}}{\sum_{k=1}^{J} U_{ik}} = \frac{S_j^{\alpha} D_{ij}^{\beta}}{\sum_{k=1}^{J} S_k^{\alpha} D_{ik}^{\beta}}$$

where P_{ij}: probability of consumer at "i" visiting store j (or town j); J is the set of competing stores (or towns) in the region.
U_{ij}: utility of store (or town) j for individual at "i".
S_j: size (square metres) of outlet j (or set of outlets of town j)
D_{ij}: distance between consumer at "i" and store (or town) j.
α, β: sensibility parameters; in line with Reilly's Law, $\alpha = 1$ and $\beta = -2$.

As an illustration of this model (Table 8), we present one of the cases studied in the Hispano-Lusitanian frontier area. Consider an individual living in the municipality of Moura (Beja) who has the opportunity to shop at three market head towns: Beja, Évora and Badajoz. In view of the sizes of these market heads and their distances from the consumer's home, the probability that the consumer will shop at Badajoz is 0,62. Therefore, 62 in 100 journeys of consumers in Moura, to do the main shopping, take place to Badajoz. In the same way, 16 and 22 of 100 journeys take place to Beja and Évora, respectively.

Table 8:
Illustration of the application of the original Huff Model.

Market head	Distance (Km.)	Size (square metres)
Badajoz	133	55.319
Évora	89	8.725
Beja	58	2.628

If $\alpha = 1$ and $\beta = -2$:

Utility of **Badajoz** head	$55.270 * 133^{-2} = 3,12$
Utility of **Évora** head	$8.725 * 89^{-2} = 1,10$
Utility of **Beja** head	$2.628 * 58^{-2} = 0,78$

Based on these utilities, the probabilities that individuals in **Moura** will shop at Badajoz, Évora and Beja market heads of area are:

Probability of buying in **Badajoz** head	3,12 / (3,12 + 1,10 + 0,78) = 0,62
Probability of buying in **Évora** head	1,10 / (3,12 + 1,10 + 0,78) = 0,22
Probability of buying in **Beja** head	0,78 / (3,12 + 1,10 + 0,78) = 0,16
Total	0,62 + 0,22 + 0,16 = 1

When applying Huff model, it is important to consider the existence of **different kind of roads**. In the example, the consumers of Moura must travel though B road all the way distance to Badajoz. Nevertheless, they can cover through A road 55 km. to Évora and 29 km. to Beja. It is obvious that it is possible to drive at higher speed in A than in B road. In such cases, we usually measure the friction variable in terms of **travel time** instead of physical distance (km.). On the average, we assign the following speeds:

. Motorways: 120 km/h.
. A road: 90 km/h.
. B road: 70 km/h.

At that point, we can present some results of the application of Huff model over certain municipalities situated around the breaking points designated by Reilly's Law. We must remember that the objective of this study is the estimation of the real dimension of Spanish market areas, considering the existence of Portuguese retailing heads and consumers. That is why in the following tables, we only include the probabilities relative to the Spanish market heads.

After a deep analysis of the study area, we have concluded that the only Spanish heads of market area visited by Portuguese consumers are **Huelva, Badajoz, Zamora and Vigo** (4

in 9 heads of area existent in the frontier). Therefore, the interactions between market heads are the following:

1. Interaction Huelva – Portimao-Albufeira - Beja

	Huelva	**Portimao-Albufeira**	**Beja**
Size (square metres)	55.319	31.125	2.628

Municipality	**Prob. (%) Huelva**	**Municipality**	**Prob. (%) Huelva**
Faro	14%	Valle de Açor	34%
Tavira	31%	Serpa	37%
Cacela	46%	Vila Verde de Ficalho	78%
Moncarapacho	10%	Vila Nova de Sao Bento	67%
Mértola	52%	Moura	30%
Acaria Ruiva	46%		

2. Interaction Badajoz – Évora - Beja

	Badajoz	**Évora**	**Beja**
Size (square metres)	55.270	8.725	2.628

Municipality	**Prob. (%) Badajoz**	**Municipality**	**Prob. (%) Badajoz**
Moura	46%	Mourao	70%
Barracos	83%	Redondo	59%
Sobral de Adiça	41%	San Miguel de Machede	10%
Alqueva	38%	Azaruja	80%
Reguengos de Monsaraz	36%	Évoramonte	43%

3. Interaction Badajoz – Portalegre - Abrantes

	Badajoz	**Castelo Branco**	**Abrantes**
Size (square metres)	55.270	12.805	6.274

Municipality	**Prob. (%) Badajoz**	**Municipality**	**Prob. (%) Badajoz**
Crato	29%	Ponte de Sor	31%
Portalegre	91%	Tolosa	30%
Pavia	45%	Fronteira	81%
Mora	53%	Apalhao	28%
Montargil	42%		

3. Interaction Zamora – Bragança - Mirandela

	Zamora	**Bragança**	**Mirandela**
Size (square metres)	30.562	3.275	7.314

Municipality	Prob. (%) Zamora	Municipality	Prob. (%) Zamora
Portelo	17%	Santa Comba de Rossas	14%
Moimenta	52%	Mogadouro	73%
Bragança	58%		

4. Interaction Vigo – Braga - Porto

	Vigo	Braga	Viana do Castelo
Size (square metres)	92.135	96.747	4.375

Municipality	Prob. (%) Vigo	Municipality	Prob. (%) Vigo
Rubiaes	63%	Moledo do Minho	42%
Ponte de Lima	15%	Viana do Castelo	32%
Caminha	72%		

III.4. Telephone survey (4th step)

Lawrence R. Klein Institute methodology usually applies telephone survey to certain zones. Survey may rise some variables different from the ones that are included in the models, such as disposable personal income, prices or another subjective factors that can influence in the consumers' behaviour sometimes. Nevertheless, in this preliminary study, we have not applied this method that should be used in the future, with enough financing and time to do a Portuguese Retail Trade Atlas.

III.5. Final determination and quantification of market areas (5th step)

The final selection of municipalities has taken account the modelling results, specially the probabilities assigned by **Huff Model**. Though Huff model considers that consumers may visit several different stores or market heads with different intensity (probability), we must draw market area borders and decide its dimension. To do that we have to consider the number of heads interacting in a certain region, to choose the correct probabilities:

. With 2 heads interacting: Prob. > 0,5 (50%)
. With 3 heads interacting: Prob. > 0,3 (30%)

Therefore, according to the modelling results, we can present a first scope of the real shape of the Spanish market areas located in the frontier with Portugal. There are 2 measures of market area dimension: number of municipalities included, total population and potential market. In Table 9, we show the Portuguese main towns added to the Spanish frontier market areas. As it can be seen, the Spanish market area with more growing is Badajoz, with 17 Portuguese municipalities, followed by Vigo (11), Huelva (6) and Zamora (4). Cáceres, Plasencia, Ciudad Rodrigo, Salamanca and Ourense do not acquire any Portuguese towns.

The L.R. Klein Trade Atlas also considers what we call "**shared gravitation areas**", as the set of municipalities whose consumers go to more than one market head. That is what we think occurs with the majority of the estimated Portuguese municipalities: their residents go both to Portuguese and Spanish market heads.

In Vigo market area, we would like to highlight a retailing phenomenon: the special attraction exerted by one department store or shopping centre over consumers, that makes them go further to visit this retailing outlet. That is the case of **"El Corte Inglés"**, located in Vigo outskirts. This Spanish well known department store attracts the residents of some Portuguese municipalities, marked with the symbol (*), with low probabilities in spatial models. This occurs because these municipalities are near Braga and Porto, with enough commercial equipment and the models consider the mass variable "sales surface" as a whole, without taking account between different kind of stores. Nevertheless, according with the knowledge of some Galicia retailing experts, El Corte Inglés exerts a special attraction including them in Vigo market area.

Table 8:
Portuguese municipalities added to the Spanish frontier market areas.

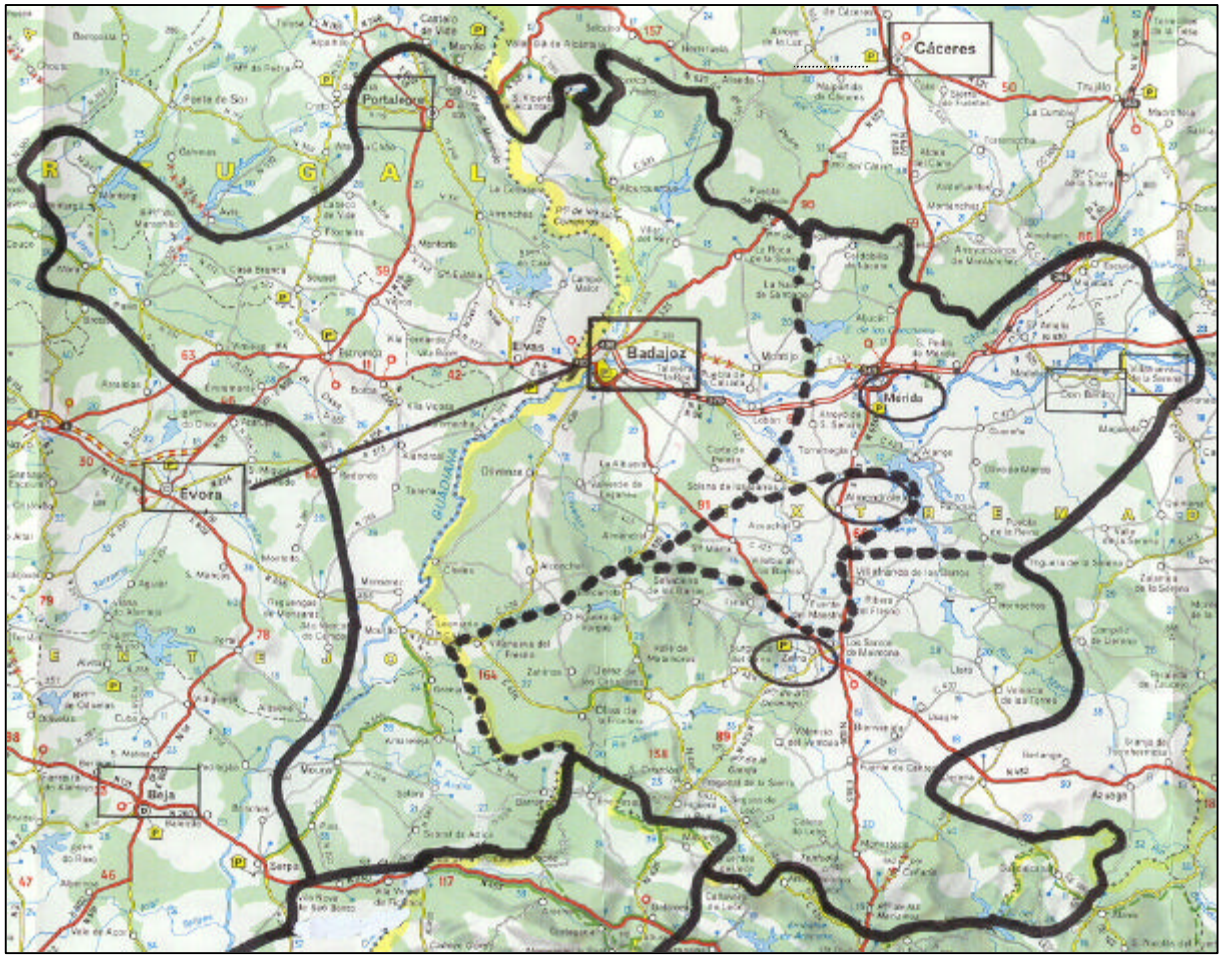
Spanish Market Area	Portuguese municipalities added		Number of new municipalities
Huelva	Alcoutim		
	Castro Marim		
	Faro		6
	Mértola		
	Tavira		
	Vila Real de Santo Antonio		

Spanish Market Area	Portuguese municipalities added		Number of new municipalities
Badajoz	Alandroal	Monforte	
	Arronches	Mora	
	Barrancos	Moura	
	Borba	Mourao	
	Campo Maior	Portalegre	17
	Elvas	Redondo	
	Estremoz	Sousel	
	Évora	Vila Viçosa	
	Fronteira		

Spanish Market Area	Portuguese municipalities added	Number of new municipalities
Zamora	Bragança	
	Miranda do Douro	4
	Mogadouro	
	Vimioso	

Spanish Market Area	Portuguese municipalities added		Number of new municipalities
Vigo	Arcos de Valdevez (*)	Ponte de Barca (*)	
	Braga (*)	Ponte de Lima (*)	
	Caminha	Valença	11
	Melgaço	Viana do Castelo (*)	
	Monçao	Vila Nova de Cerveira	
	Paredes de Coura		

Table 9:
Real dimension of Badajoz market area.



IV. RETAILING FIRMS IN PORTUGAL AND SPAIN

At last, after re-estimating the real weight of Spanish frontier market areas, we will analyse the actual situation of retail firms that interact in Portugal and Spain. In both countries, it has been produced, in the last years, a decrease of small retail firms. In addition, it has been opened bigger retailing firms together with the apparition of the Commercial Areas. The big European firms of retail distribution are installed in both countries.

The policy of the Spanish and Portuguese Governments is so similar. At first, it does not exist any intervention and it has been approved a legislation oriented to the need of authorisations for the opening and the regulation of opening/close times.

Another common feature in the actual situation is that the volume of transactions between firms of both countries is bigger. If we go to a Portuguese hypermarket, we can find a high number of products that are made in Spain.

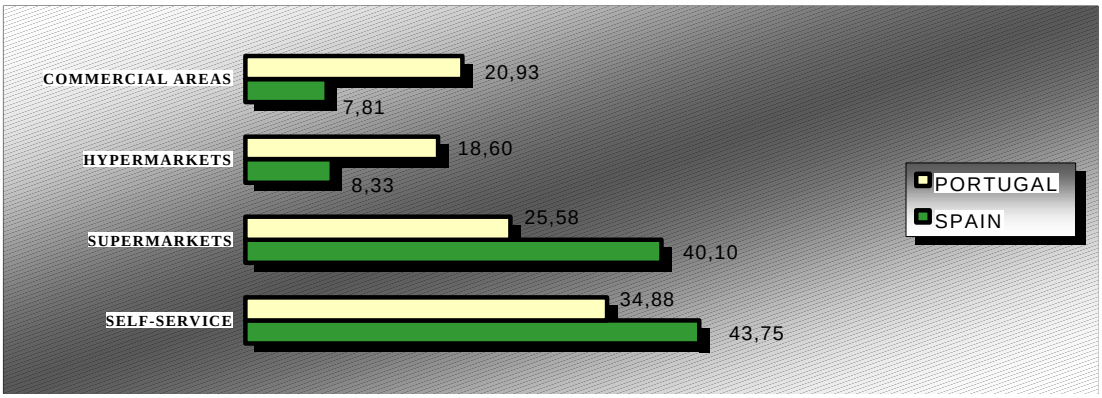
However, even though the convergence of both models, there are features that differentiate Spain of Portugal. Population in Portugal is concentrated in a small number of urban areas; we can detach Lisbon and Porto zones and their respective metropolitan areas.

They absorb a high number of establishments (35 per cent of the total). This fact makes that it appears **two different commercial scenes**:

- **Porto and Lisboa**, where you can find a great number of hypermarkets and where exits big commercial centres (Malls). As for example, in October of 1997 it has been opened in Lisboa the Colombo Commercial Centre, the biggest in the Iberian Peninsula. Its area of construction is 410.000 m^2, which are distributed in six floors, three of which are underground floors (parking zone). In the other three floors are located 431 shops with 116.000 m^2, 82.000 of those are occupied by the big retail firm of Sonae.

- **The rest of the country** that it is composed of different municipalities, not as big as Porto and Lisboa, but that act as centres of consume for the rest of population. They are also centre of those small rural towns that are difficult to aced because of the infrastructures.

Figure 1
RETAIL IN PORTUGAL AND SPAIN



Source: Self-elaboration

Note:
Self-service: *100 – 599 m^2*
Supermarkets: *600 – 1.499 m^2*
Hypermarkets: *1.500 – 4.999 m^2*
Commercial Areas: *more than 5.000 m^2*

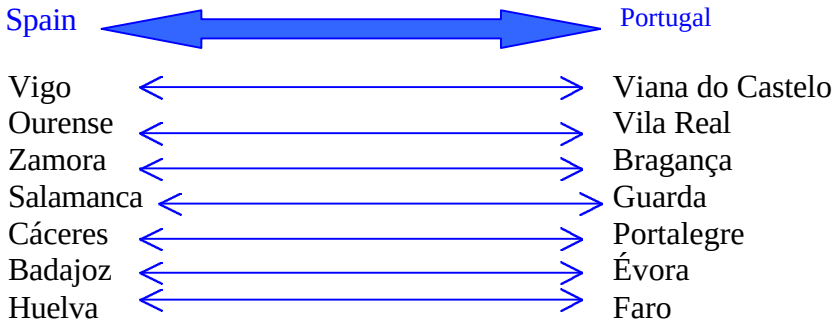
The positions of domain in the alimentary market are in hands of for international groups. **Promodès** is in the head. It is present in *Spain* through the societies Continente (68 per cent of participation), DIASA (65 per cent), Simago (100 per cent) and Puntocash (100 per cent); and in *Portugal* Continente's model (22 per cent), Dia (57 per cent) and Minipreço (100 per cent). In second place, we can find **Carrefour** that in *Spain* is the chain Pryca (69 per cent) and in *Portugal* is Carrefour-Portugal (50 per cent). In third place is the French Company **Auchan** represent in *Spain* by Alcampo (100 per cent) and since summer of 1996, they add their participation in Pâo de Açucar Portugal (94 per cent) and Sabeco-Spain (97 per cent). The last one is **Royal Ahold** proprieties of the 49 per cent Portuguese firm Jeronimo, and in a Joint Venture with the Catalan firm Caprabo.

Table 10
GLOBAL MARKET

	Spain		Portugal	
	Establishments	Sales (1996) mill.ptas	Establishments	Sales(1996) mill.ptas
PROMODÈS	1.899	839.474	281	318.887
CARREFOUR	53	538.619	2	53.146
AUCHAN	150	382.012	39	201.000
R. AHOLD	86	89.764	114	269.000

IV.1 Spanish and Portuguese market area municipalities

We are going to study the retailing firms that are located in the head market areas in the frontier. Those municipalities are:



As we can see there is a correlation between both countries, those above are classified by proximity in the frontier, and because of the good communication (infrastructures). For that reason we are going to make the study in couples of municipalities (see Table11).

⇨ The first couple is *Huelva-Faro* (Andalucia[2]-Algarve[3]). The two Commercial Areas that we can find in Huelva are **CC. Continente** of 12.518 square metres of sale surface and **Hipercor** of 11.000 square meters. In Faro, the biggest one is a **Pingo Doce** (1.854 m^2). In that case, there are not the same international groups in both sides of the frontier, Promodès, El Corte Inglés (in Spain) and R. Ahold (in Portugal) are the ones represented. Pingo Doce differs from the other ones because it practices a policy of high prices and normally is located in the best zones of the city.

⇨ *Badajoz-Évora* (Extremadura-Central Alentejo). The biggest Commercial Areas in Badajoz are **CC. Continente** of 17.700 square meters of sale surface and **CC. Pryca** with 10.870 square meters. Évora has a **CC. Feira Nova** (7.314 m^2). The international groups that appear here are Promodès and Carrefour in Spain. If we observe in Portugal, it emerges again R. Ahold, because Feira Nova belongs to Jeronimo Martins (as well as Pingo Doce).

[2] Name of the Spanish Autonomy that the municipality belongs.
[3] NUT III nomenclature of Portugal regions.

⇨ *Cáceres-Portalegre* (Extremadura-Alto Alentejo). We find three Commercial Areas in Cáceres: **CC. Ruta de la Plata** (19.237 square meters), **CC. Hipertambo** (8.000 square meters) and finally **Eroski** (7.000 square meters). In the other hand, in Portalegre the bigger retail outlet that we can find is **Modelo** with 1.994 square meters of sale surface. In that case, only Eroski belongs to a big group from the Basque Country. Modelo are Sonae Group supermarkets.

⇨ *Salamanca-Guarda* (Castilla y León-Beira Centre). **CC. Pryca** (9.274 m^2) and **CC. Merca 80 Garrido** are the Centres located in Salamanca. By the way, in Guarda they have a **Modelo** as the biggest centre with 2.000 square meters of sale surface. Here arise Carrefour (in Spain) and Promodès (Sonae Group is included in here) operating in Portugal.

⇨ *Zamora-Bragança* (Castilla y León-North Tras Os Montes). In Zamora, there are two big Commercial Areas: those are **CC. Valderabuey,** with 18.472 square meters, and **Eroski** that has 6.495 square meters of sale surface. In the other side, Bragança has a **Feira Nova** of 2.965 as the biggest one.

⇨ *Ourense-Vila Real* (Galicia-North Douro). In that case, **CC. Continente** of Ourense with 10.539 square meters is the biggest of both municipalities. Vila Real has only a **Modelo** of 2.873 square meters of sale surface. Here is the only place that we find two retail firms that belong to the same Group. Both, Continente and Modelo are from the group Promodès.

Table 11
RETAIL IN FRONTIER MARKET AREAS

	Self-Service	**Supermarkets**	**Hypermarkets**	**Commercial Areas**
Bragança	1	0	1	0
Zamora ➚	4	2	1	2
Guarda	2	2	1	0
Salamanca ➚	21	14	3	2
Viana do Castelo	0	1	1	0
Vigo ➚	26	16	0	3
Vila Real	1	1	1	0
Orense ➚	12	14	1	1
Faro	2	1	1	0
Huelva ➚	3	17	2	2
Portalegre	2	1	1	0
Cáceres ➚	5	4	1	3
Evora	4	1	2	0
Badajoz ➚	7	5	6	2

⇨ The last pair is *Vigo-Viana do Castelo* (Galicia-North Minho Lima). Vigo, as a medium city, has four Commercial Areas (two belongs to the same retail firm): **El Corte Inglés** (31.595 m^2), **CC. Alcampo Vigo I** and **II** (9.140 and 11.200 m^2) and **CC. Camelias** with 7.106 square meters of sale surface. Viana do Castelo has only one hypermarket **Modelo** of 3.500 square meters and a supermarket **Pingo Doce** with 875 square meters of sale surface. Since now, it does not appear Alcampo that belongs to Auchan Group or Pâo de Açucar, a classic in the Portuguese retail distribution, which was absorbed, in 1996, by the French group Auchan.

As we have seen, almost every big international group has a retail store in the frontier between Spain and Portugal. The group PROMODÈS is the one that have more shops and it goes from the south to the north operating in both sides of the frontier. CARREFOUR and R.AHOLD are behind Promodès group but they are located more in the south and centre of the bounding. There are only two municipalities where we find the same group acting in both countries, which are located in the north of the Iberian Peninsula. This municipalities are Ourense (Galicia-Spain) and Vila Real (North Douro-Portugal).

V. CONCLUSIONS

This work has focused on the **estimation process** developed by the Lawrence R. Klein Institute in determining intermetropolitan market areas using **spatial interaction models and survey.** We have studied those areas that have a common border with Portugal, which are actually determined as cut by the frontier, considered as a fictitious barrier. In this paper, we have estimated, for the first time, the real dimension of the Spanish market areas situated in the border with Portugal. We have also determined the **frontier Portuguese market areas,** as a beginning of a possible Portuguese Retail Trade Atlas.

Attending to the number a municipalities measure, the Spanish market area with more growing is Badajoz, with 37 Portuguese municipalities, followed by Vigo (12), Huelva (10) and Zamora (7). Cáceres, Plasencia, Ciudad Rodrigo, Salamanca and Ourense do not acquire any Portuguese town. This is due to bad road communications between both countries and to the presence of similar commercial equipment in some Portuguese municipalities located in the other side of the Spanish heads. That is the case, as we have shown, of Huelva-Faro, Badajoz-Évora, Cáceres-Portalegre, Salamanca-Guarda, Zamora-Bragança, Ourense-Vila Real and Vigo-Viana do Castelo.

This work should be completed with telephone survey in some Portuguese municipalities, necessary to reassure these results. We have also to analyse another size measures of the market areas, like population and potential market.

We are conscious of having started a necessary research to complete the Lawrence R. Klein Institute estimations published in the “Trade Year-Book”. We think it would be interesting not only for Spanish but also for Portuguese authorities and researchers, to know the existence of such spatial flows and facilitate the consumers their shopping journeys with adequate infrastructure.

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