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The Agri-Food trade in Spain: specialization and international competition

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***Agri-food trade in Spain:
Specialization and international competition***

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1.- Introduction

Agri-food industry as the sum of the agriculture, livestock, forestry and fishing and food industry (food, beverages and tobacco) is one of the economic sectors with the greatest international projection in the Spanish economy (13 percent of trade in goods and 16 percent of total exports), preceded only in volume of exports by the automotive sector, a trade specially linked to foreign markets.

Spain is rated highly in the international ranking of agri-food exporters, taking seventh position and maintaining its world market share in the past two decades despite the growing competition. However, other main participants in this market, such as Germany, France, the Netherlands and Italy within the European Union (EU) or the United States outside the EU, have lost their positions in favor of the major world producers.

The aim of this paper is to analyze the position of Spain in the global agri-food market through the study of specialization and diversification of trade, both of exported products and of the suppliers and customers of these products. This analysis will allow the identification of the strongest chapters of agriculture and food exports. It will also determine the ability of Spain to consolidate and improve the position reached in world markets given the dynamics of international demand of each of the chapters considered and the degree of diversification in terms of importing countries and exports.

2.- Methodology and sources of information

To perform the analysis, information about world imports and exports (annual frequency) from the *Comtrade* Database, United Nations, has been used. For the more

detailed Spanish figures, information from *DataComex*, from the Spanish Ministry of Economy and Competitiveness, has been employed, which is consistent with the data provided by Comtrade. We work with a disaggregation level of 2 digits, using the first 24 agri-food chapters of the Harmonized System (HS) of tariff nomenclature (the Integrated Tariff of the European Communities (TARIC) for the EU)¹.

The study period ranges from 1995 to 2013 or 2014 according to the available information. This is a sufficient period of time to allow changes in exports and customers to be observed.

Two indices are used to determine the export specialization of each region and the degree of similarity of the export pattern in the reference area (in this case, the whole world). The first one is the *Export Specialization Index (ESI)*, which is calculated as follows:

$$IEE_j = \left(\frac{(X_{AGj}/X_{Tj})}{(X_{AGW}/X_{TW})} \right) \times 100$$

where ESI_j is the Export Specialization Index of the area "j"; X_{AGj} are agricultural exports of the "j" area; X_{Tj} are the total exports of the "j" area; and X_{AGW} and X_{TW} are similar variables, but refer to the whole world.

A value above 100 indicates a greater specialization of the "j" area in the agri-food industry exports than the reference area and a value of less than 100 implies a lower export specialization of that chapter in the "j" area regarding the whole world.

¹ These 24 sectors are: 01 Live animals; 02 Meat and edible meat offal; 03 Fish and crustaceans, mollusks and other aquatic invertebrates; 04 Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included; 05 Products of animal origin, not elsewhere specified or included; 06 Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage; 07 Edible vegetables and certain roots and tubers; 08 Edible fruit and nuts; peel of citrus fruit or melons; 09 Coffee, tea, mate and spices; 10 Cereals; 11 Products of the milling industry; malt; starches; inulin; wheat gluten; 12 Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder; 13 Lac; gums, resins and other vegetable saps and extracts; 14 Vegetable plaiting materials, vegetable products not elsewhere specified or included; 15 Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes; 16 Preparations of meat, of fish or of crustaceans, mollusks or other aquatic invertebrates; 17 Sugars and sugar confectionery; 18 Cocoa and cocoa preparations; 19 Preparations of cereals, flour, starch or milk; pastrycooks' products; 20 Preparations of vegetables, fruit, nuts or other parts of plants; 21 Miscellaneous edible preparations; 22 Beverages, spirits and vinegar; 23 Residues and waste from the food industries; prepared animal fodder; 24 Tobacco and manufactured tobacco substitutes.

The second index, the *Relative Specialization Index (RSI)* is calculated as follows:

$$IER_j = \sum_i |(X_{ij}/X_{AGj}) - (X_{iW}/X_{AGW})|$$

where RSI_j is the Relative Specialization Index of the “j” area. X_{ij} are exports of each “i” agri-food chapter produced by the “j” area; X_{AGj} are total agri-food exports of the “j” area; and X_{AGW} and X_{TW} are similar variables, but referred to the whole world.

This index ranges between 0 and 200. A value close to 0 indicates that the export model of the “j” area is similar to the reference space (the world), and a value close to 200 means that both areas have a different export pattern.

Finally, a Normalized Herfindahl-Hirschman Index (NHHI) is used to estimate the degree of export diversification, by products and customers. This concentration index is calculated as follows:

$$\text{NHHI (products)} = \frac{\left(\sum_{j=1}^i \left(\frac{X_{ij}}{X_{Tj}}\right)^2\right)^{1/2} - \left(\frac{1}{i}\right)^{1/2}}{1 - \left(\frac{1}{i}\right)^{1/2}}$$

$$\text{NHHI (customers)} = \frac{\left(\sum_{j=1}^i \left(\frac{X_{ij}}{X_{Ti}}\right)^2\right)^{1/2} - \left(\frac{1}{n}\right)^{1/2}}{1 - \left(\frac{1}{n}\right)^{1/2}}$$

where X_{ij} are exports of the “i” sector and the “j” region (Spain) (or “i” sector to the “j” market depending on whether the index is calculated for products or customers); X_{Ti} are the total exports of the “i” sector and X_{Tj} are the total exports of the “j” region (Spain). An index value equal to 1 indicates that the region (Spain) is fully specialized in a single sector, while a value close to 0 implies that exports of the region are very diversified. With regards to markets, an index value of 1 indicates that the “i” export

industry is directed only to one market, while a value close to 0 implies that exports of the sector are divided among multiple customers.

3.- Sectoral and territorial specialization of Spanish exports

As stated in the introduction, references to the agri-food industry includes both the products obtained from the agriculture and fisheries sector for final consumption and the products manufactured by the food industry (FI).

Spain shows a stable agri-food trade pattern not only in the field of exported products, but also in the regional origin of these products. However, the country has undergone some changes that require explanation.

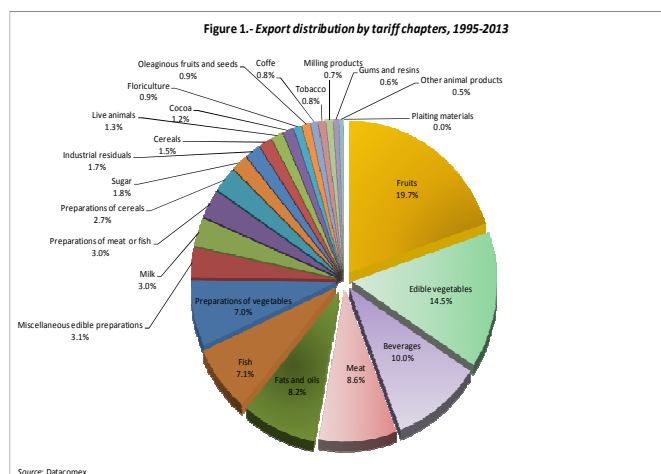


Table 1.- Evolution of agri-food exports (average annual accumulated rate)

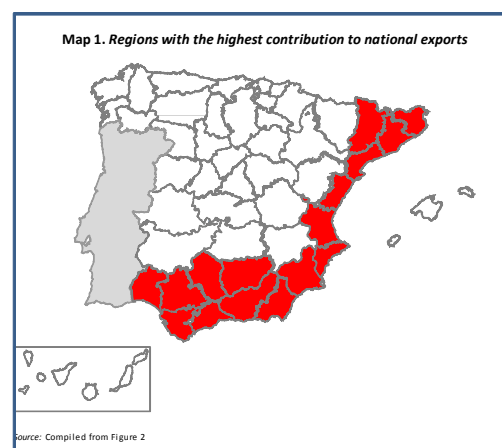
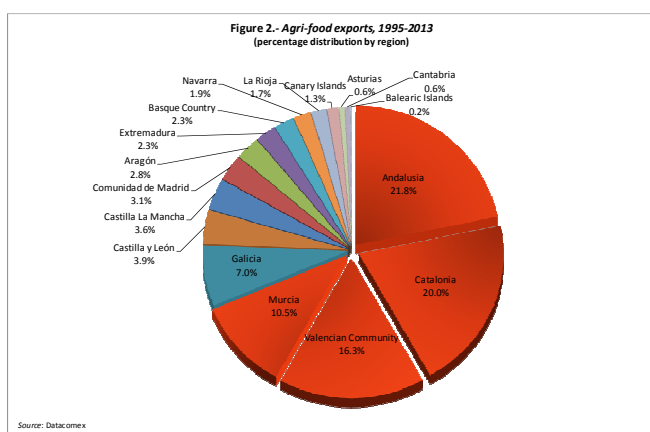
	1995-2013	2008-2013
Live animals	5.2	10.3
Meat	12.1	6.8
Fish	6.4	3.7
Milk	8.2	3.9
Other animal products	11.0	6.9
Floriculture	4.2	3.4
Edible vegetables	5.6	5.1
Fruits	5.2	6.8
Coffe	7.8	10.6
Cereals	5.9	-2.3
Milling products	1.0	5.2
Oleaginous fruits and seeds	13.2	10.8
Gums and resins	5.0	7.4
Plaiting materials	3.0	-10.2
Fats and oils	8.3	3.4
Preparations of meat or fish	8.1	5.8
Sugar	2.6	5.3
Cocoa	7.0	6.0
Preparations of cereals	10.8	8.8
Preparations of vegetables	5.7	4.5
Miscellaneous edible preparations	10.2	5.0
Beverages	7.8	7.1
Industrial residuals	13.3	11.9
Tobacco	7.6	4.1
<i>Agri-food</i>	7.0	5.8
Total Exports	6.9	4.4

Source: Comtrade

Seven tariff chapters account for three-quarters of the Spanish exports in the period between 1995 and 2013 (Figure 1): Fruits (20 percent), Vegetables (15 percent) Beverages (10 percent), Fats and oils (9 percent), Meat (8 percent), Fish, Crustaceans and Mollusks (7 percent) and Preparations of vegetables, fruit, nuts or other parts of plants (7 percent). All these chapters constitute a significant part of international demand: 10 percent of Fruits and Vegetables, 5 percent of Beverages and Preparations of vegetables, 4 percent of Fats and oils and Meat and 3 percent of Fish (see Table 3).

Each of these seven chapters have evolved differently over the last twenty years. While Fish, Fruits, Vegetables and Preparations of vegetables decreased in foreign sales, Meat, Fats and oils and Beverages increased their total market share, especially Meat products (Table 1).

Spanish agri-food exports are mainly concentrated in the Mediterranean area (see Map 1), a strip of land with favorable agro-climatic conditions for the production of those products with the greatest presence in the external supply. Andalusia, Catalonia, the Valencian Community and Murcia are the regions registering the highest export contribution, accounting for about two thirds of these sales (Figure 2).



The export model of these four regions, given its contribution to national exports, is very similar to the whole country. Thus, in Andalusia, the main export chapters are Vegetables (30 percent), Fruits (19 percent) and Fats and oils (21 percent). In Catalonia, Meat (23 percent), Beverages (13 percent) and Fats and oils (11 percent) are the subsectors with the largest contribution. In Valencia, Fruits and Vegetables account for almost three quarters of exports in that community. Finally, three quarters of exports in Murcia are unequally distributed among Vegetables (33 percent), Fruits (27 percent) and Preparations of vegetables (16 percent).

Table 2 shows the export structure of the different national territories in comparison to the whole world using the Export Specialization Index (ESI) and the Relative Specialization Index (RSI) for the period under review.

In the first indicator (ESI), all regions except for Asturias, the Balearic Islands, Madrid and the Basque Country have a higher degree of specialization in the agri-food trade compared to the global average. Murcia, Extremadura and La Rioja (whose exports are mainly concentrated in agri-food products), Castile-La Mancha, Andalusia, Catalonia and the Valencian Community register particularly high levels.

Table 2. Specialization Indices of agri-food trade

	ESI		RSI	
	1995-2013	2008-2013	1995-2013	2008-2013
TOTAL WORLD	100.0	100.0	0.0	0.0
<i>Spain</i>	<i>192.4</i>	<i>191.9</i>	<i>60.3</i>	<i>58.9</i>
Andalusia	447.4	387.9	112.6	113.1
Aragón	117.3	133.5	84.5	87.6
Asturias	77.2	69.0	137.1	137.4
Balearic Islands	48.2	50.8	110.7	113.5
Canary Islands	282.9	122.0	141.4	132.0
Cantabria	101.0	121.4	116.2	122.2
Castilla y León	130.4	147.4	72.2	74.7
Castilla-La Mancha	399.4	425.2	102.7	106.7
Catalonia	144.2	160.5	62.4	64.9
Valencian Community	278.8	289.9	127.7	125.1
Extremadura	662.5	678.0	99.9	101.6
Galicia	179.7	165.0	123.7	125.1
Madrid	51.8	53.2	50.3	52.8
Murcia	716.7	619.2	122.1	113.1
Navarra	106.5	121.9	106.9	103.5
Basque Country	46.0	49.8	98.8	101.5
La Rioja	491.8	487.6	135.0	137.8

Source: Comtrade and Datacomex

Secondly, the RSI reflects the degree of similarity or divergence between the supply of each region and the world demand. As shown in Table 2, the export pattern of the main export regions substantially differs from the pattern of international demand. Catalonia and Castile and Leon are regions with a composition of its agri-food exports more similar to that of the world economy, while the Valencian Community and Murcia have a more differentiated export structure. The important weight of two chapters, Fruits and Vegetables, in the southernmost regions, and the greater diversification of the export model of Catalonia and Castile and Leon, could explain this situation. However, the export pattern of Spain and a significant part of the regions (mainly those with a greater weight in the total Spanish exports) has progressively reduced the degree of disparity with the whole world.

Initially, the differences between the structures of the Spanish exports with respect to the pattern of international demand could be considered problematic, although, as demonstrated below, the dynamics of international demand is favorable to Spanish specialization, which may contribute not only to consolidate the favorable position of Spain in world markets, but also to improve it.

4.- The Spanish Agri-food position in international markets

Spain is the seventh largest exporter of agri-food products in the world and the fourth in the EU, with an international market share of around 3 percent, nearly double the percentage registered by Spain in the total exports of goods.

**Table 3.- Major exporting countries of the world and position of Spain
in international trade, 2013
(percentages of whole world)**

Live animals	Spain (9) 2.9	The Netherlands 13.6	France 11.1	Germany 9.6	Canada 8.4	Denmark 5.2	USA 4.7
Meat	Spain (6) 4.2	USA 13.2	Brazil 12.0	Germany 8.4	The Netherlands 8.0	Australia 6.7	Denmark 3.9
Fish	Spain (9) 2.9	China 12.7	Norway 10.3	USA 5.2	Vietnam 5.1	India 5.1	Chile 4.2
Milk	Spain (16) 1.5	Germany 13	Poland 12.0	The Netherlands 11.1	France 9.0	USA 6.2	Belgium 4.8
Other animal products	Spain (8) 3.0	China 22.1	Germany 11.1	USA 10.3	Brazil 6.4	The Netherlands 6.1	N. Zealand 3.7
Floriculture	Spain (11) 1.6	The Netherlands 49.3	Colombia 6.2	Germany 5.1	Belgium 4.6	Italy 4.1	Ecuador 3.9
Edible vegetables	Spain (3) 9.9	The Netherlands 12.3	China 12.3	Mexico 8.4	USA 6.9	Canada 6.7	Belgium 4.4
Fruits	Spain (2) 9.8	USA 15.3	Chile 5.8	The Netherlands 5.7	China 4.4	Italy 4.3	Turkey 4.2
Coffe	Spain (24) 1.1	Brazil 11.6	Vietnam 8.8	Germany 7.0	India 6.8	China 5.3	Switzerland 5.2
Cereals	Spain (27) 0.5	USA 16.6	India 9.5	France 8.9	Argentina 6.8	Canada 6.6	Australia 6.6
Milling products	Spain (17) 1.6	Germany 8.8	France 8.5	Thailand 7	Belgium 6.2	Turkey 5.9	USA 4.8
Oleaginous fruits and seeds	Spain (19) 0.6	USA 27.0	Brazil 23.2	Canada 7.3	Argentina 4.6	The Netherlands 3.6	Australia 3.1
Gums and resins	Spain (6) 3.5	India 34.2	China 12.8	Germany 7.5	USA 6.9	France 6.4	Denmark 3.0
Plaiting materials	Spain (22) 1.1	China 11.4	India 8.2	USA 7.1	Ukraine 6.8	Malaysia 6.3	Indonesia 4.9
Fats and oils	Spain (5) 4.2	Indonesia 19.8	Malaysia 16.3	The Netherlands 6.2	Argentina 5.3	Germany 4.1	USA 3.9
Preparations of meat or fish	Spain (9) 3.1	China 18.4	Thailand 14.5	Germany 7.3	USA 4.5	The Netherlands 3.7	Vietnam 3.3
Sugar	Spain (14) 1.4	Brazil 24.2	Thailand 6.4	France 5.7	Germany 5.1	USA 5.0	Mexico 4.1
Cocoa	Spain (19) 1.4	Germany 12.5	The Netherlands 11.1	Belgium 7.8	Ivory Coast 7.3	France 5.4	Nigeria 4.8
Preparations of cereals	Spain (10) 2.5	Germany 10.5	Italy 8.1	France 7.3	The Netherlands 6.9	USA 6.6	Belgium 6.2
Preparations of vegetables	Spain (6) 5.2	China 13.1	USA 8.5	The Netherlands 8.4	Belgium 6.9	Italy 6.5	Germany 5.2
Miscellaneous edible prep.	Spain (11) 2.8	USA 13.0	Germany 9.9	The Netherlands 7.9	France 5.3	China 4.0	Reino Unido 3.7
Beverages	Spain (7) 4.6	France 16.6	Reino Unido 9.9	Italy 8.5	USA 6.3	Germany 6.1	The Netherlands 5.0
Industrial residuals	Spain (14) 1.5	Argentina 15.0	USA 14.6	Brazil 8.9	The Netherlands 8.2	Germany 6.1	India 4.6
Tobacco	Spain (27) 0.9	Germany 12.1	The Netherlands 11.5	Brazil 7.9	Poland 4.9	USA 4.5	Belgium 3.3
Agri-food	Spain (7) 3.3	USA 9.9	The Netherlands 6.9	Germany 6.1	Brazil 5.7	France 5.3	China 4.2
<i>Total Exports</i>	Spain (18) 1.8	China 12.5	USA 8.9	Germany 8.3	Japón 4.1	The Netherlands 3.2	France 3.2

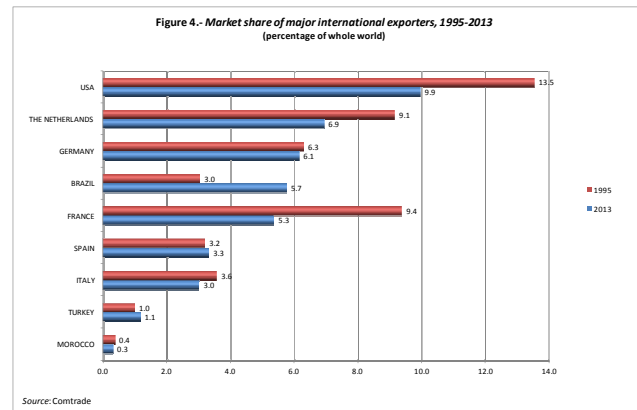
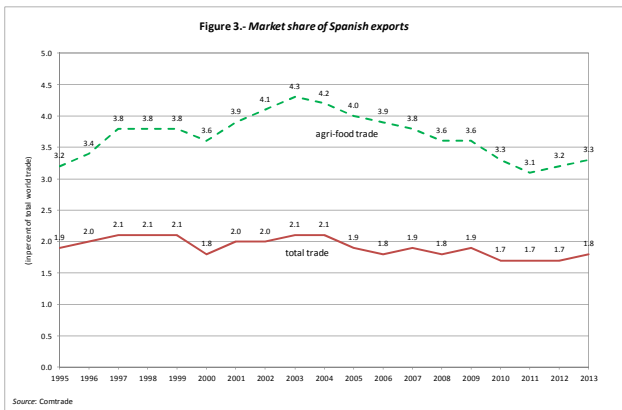
Note: in brackets, Spain's position in world trade

Source Comtrade

Table 3 (which analyzes the national contribution to global demand in each of the agri-food chapters and the market share of the major world exporters) shows that the average contribution of this sector to the foreign market is overcome by some of its

subsectors. Thus, the share of Fruits is about 10 percent, which places Spain in the second position, after the United States. It is also the third exporter in Vegetables (9.9 percent), behind the Netherlands and China; the fifth in Fats and oils (4.2 percent), behind Indonesia, Malaysia, the Netherlands and Argentina, countries that export very different products from those exported by Spain (with a high market share of olive oil); the sixth in Preparations of vegetables (5.2 percent) and Meat (4.2 percent); and the seventh in the Beverages sector (4.6 percent).

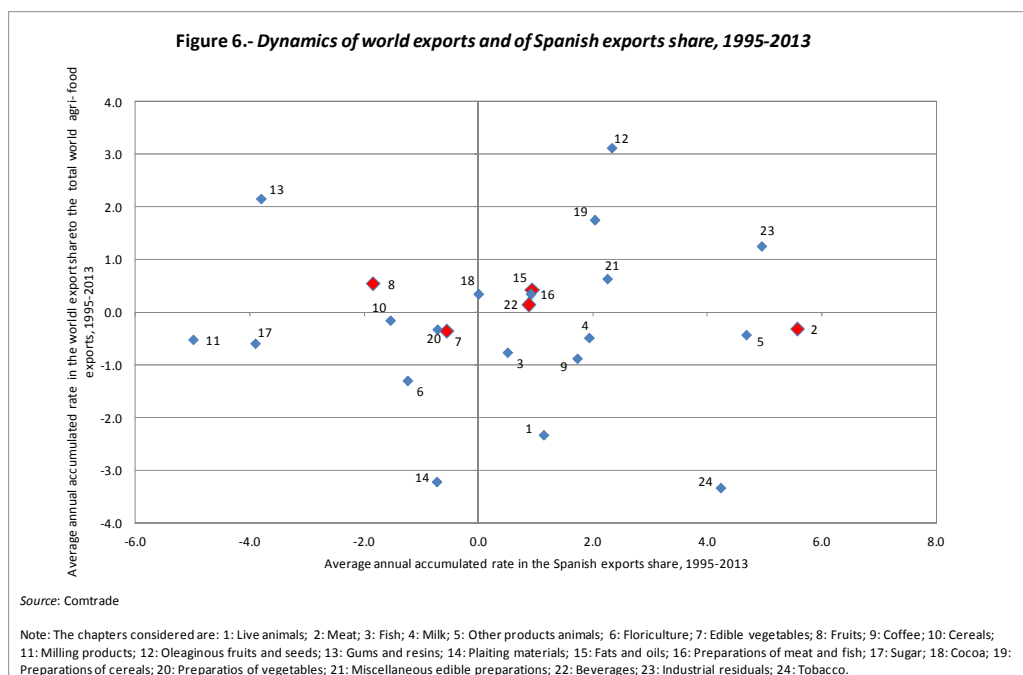
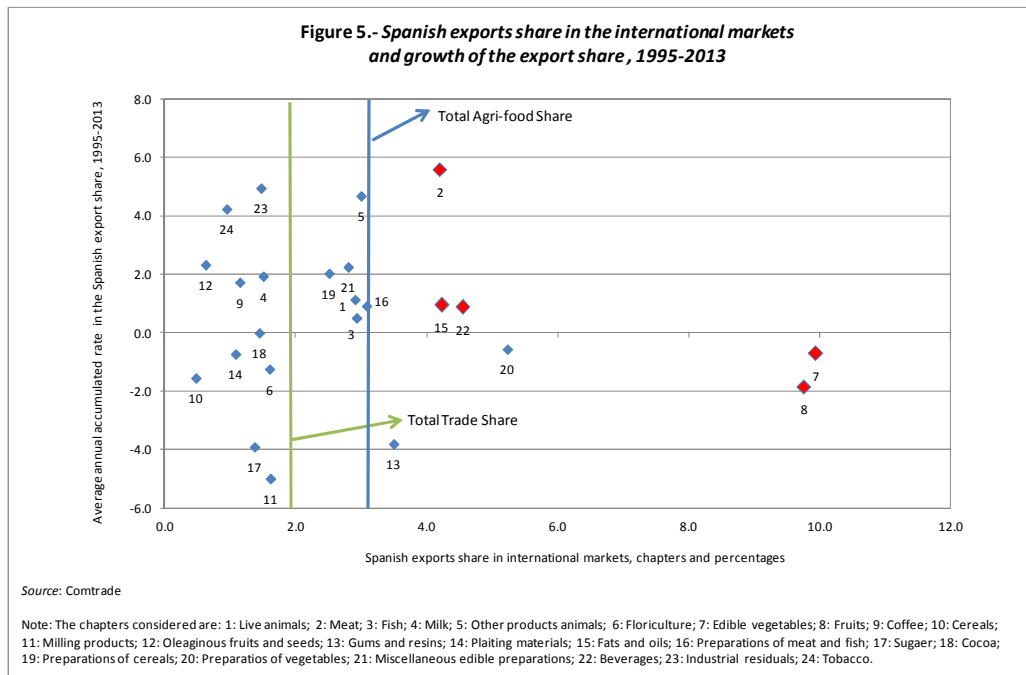
Chart 3 shows how the Spanish export share has evolved since 1995 (total goods and agri-food products), reflecting both a similar profile and a favorable trend between 1995 and 2003, especially in the case of agri-food products. Moreover, the trend is more regressive between 2003 and 2011, and registers a recovery in the last two years.



In conclusion, Spain appears to have managed to maintain its position in the world markets and even improve it slightly during a period where international competition has increased (Mora and Tello Gordo Casas, 2011), which it is an indicator of the competitiveness of the Spanish agri-food industry (Chico Ruiz et al, 2014). In fact, while Spain has managed to safeguard its share in these markets, other countries like Germany, France, the Netherlands and Italy within the EU, and the United States outside the EU, have lost positions in favor of the other big producers in the world such as Brazil (see Figure 4).

To complete the analysis of the Spanish situation in international markets, the percentage that the country registers in each of the 24 analyzed chapters has firstly been compared to its evolution in foreign markets (Figure 5), and secondly, the dynamism of international demand for each of these chapters has been contrasted with the evolution of the Spanish share in world markets (Figure 6).

Thus, three of the chapters in which Spain has a greater international presence, i.e. Fruits, Vegetables and Preparations of vegetables, demonstrate unfavorable behavior, especially Fruits, a chapter that has lost a significant market share. The opposite occurs with the other four relevant chapters of Spanish exports: Meat, Fats, Fish and Beverages, which are products whose contribution to world exports has increased, especially in the case of Meat.



Using the information provided in Figure 6, four groups of different agri-food chapters can be formed according to the dynamism of international demand (see Note 2). The first group comprises of those chapters registering a greater growth in the world market over the last two decades, with a progression of their demand at least 1 percentage point higher than the demand of total goods. The second group includes those products whose demand has grown faster than the demand of total goods, albeit at a more moderate pace, from 0 to 1 percentage point. The third set incorporates the products whose trade is growing slightly below that of total goods (between 0 and -1 percentage point). Finally, the last group includes the chapters whose exports have grown in the global market well below their counterparts in total goods.

Thus, the most dynamic group in the international market consists of Oil seeds, Gums and resins, Preparations of cereals and Industrial residuals (Figure 6), all of which are chapters with limited presence in the Spanish export supply (together, they represent about 6 percent of the country's exports, although Spain is the sixth world exporter in Gums and resins -Table 3- with a share of 3.5 percent). In the second cluster, where the growth of exports is still above the average of total goods, three of the main pillars of the Spanish exports are included: Fruits, Fats and oils and Beverages, the latter two also being very dynamic in foreign sales (see Table 1). The third group, with a more subdued international demand, includes the following: Meat, Fish, Legumes and vegetables and Preparations of vegetables, all with a remarkable significance in the Spanish exports. Finally, in the fourth group, which presents a more leisurely demand, there are no major national export products.

Therefore, in recent years, Spanish exports have concentrated on productions that have significantly increased their presence in international markets. Moreover, out of the six fastest-growing chapters in Spanish exports (Meat, Industrial residuals, Other animal products, Oil seeds, Preparations of cereals, and Miscellaneous edible preparations), the last four are those with a more dynamic demand in international markets. However, Oil seeds have a little prospect of becoming a leader in national exports, because agro-climatic conditions of the Iberian Peninsula are not conducive to its production (Table 1).

Special mention should be made of the two pillars of national exports: Fruits and Vegetables, both registering a dynamic demand in international markets, although in these chapters Spain is losing the market share, as shown in Figures 5 and 6. Without a

doubt, the concentrated degree of Spanish sales in the EU market, where competition is severe (especially in the countries bordering the Mediterranean Sea), could help us to explain the situation, which seems to suggest the need of diversification (in products, types and qualities) of both exportable supply and customers. These issues will be discussed below.

Initially, and whenever there is an appropriate balance between specialization (to appraise comparative advantages) and diversification, it is conceivable that if a trade diversification in products (variety, quality, schedule export) and customers exists, the vulnerability of the sector will be lower and there will be greater scope for the expansion of exports.

Thus, most of the Spanish exports (75 percent) have been and are still allocated to the EU, our main trading partner, not only in agri-food products but also in total goods, although the dependence on the European market in the case of agri-food products is greater than in total goods (60 percent). This is due to the high weight of perishable goods that require proximity between the markets (Table 4).

The dependence on the European market is even higher in some important chapters of Spanish exports. This is the case in Fruits and Vegetables, whose exports to EU countries account for about 90 percent of total exports. Lesser degrees of subordination are shown by the other five main chapters of Spanish exports. The meat sector, which exported 95 percent to the EU in 1995, has reduced its sales to 75 percent. Beverages allocated 73 percent of its exports to the EU, and now exports 60 percent; nevertheless, an opposing trend has been overcome by Fish, Fats and oils and Preparations of fruits and vegetables, whose percentages in this area have increased from 68, 55 and 59 percent, respectively, to 72 percent in the case of Fish, and 65 percent in the other two chapters.

Within the EU, France, Germany, Portugal, Italy and the UK are the main agri-food customers. Outside this territory, the US, Japan and China are the main buyers, albeit with significant variations depending on the tariff chapter concerned. Therefore, the US, Japan and China will become the main importers in Fat and oils; the US, Switzerland and the Philippines, in Beverages; and the Asian countries are absorbing most of the sales in the meat sector (Table 4).

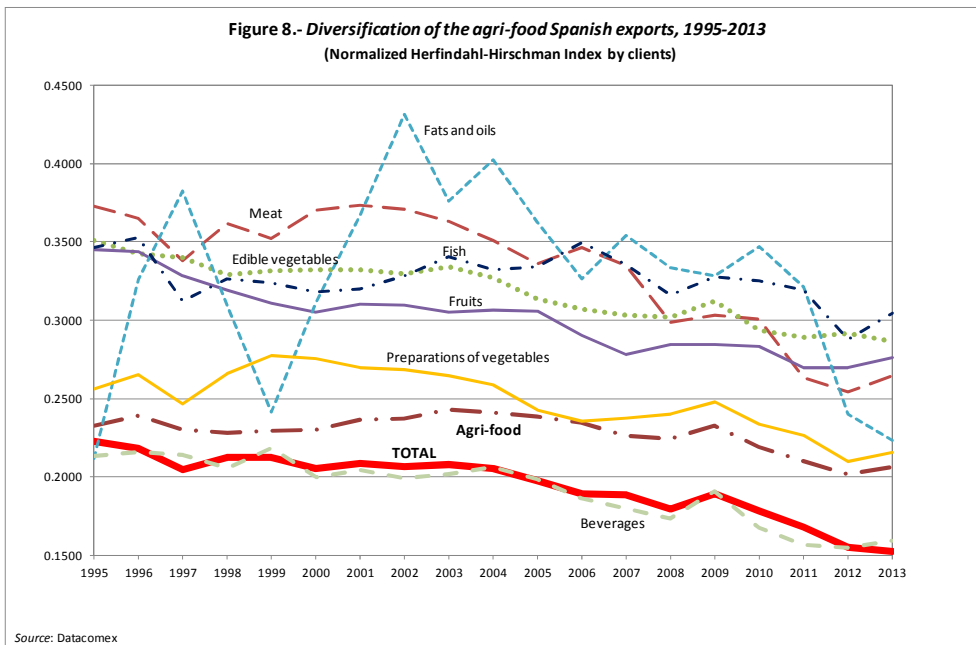
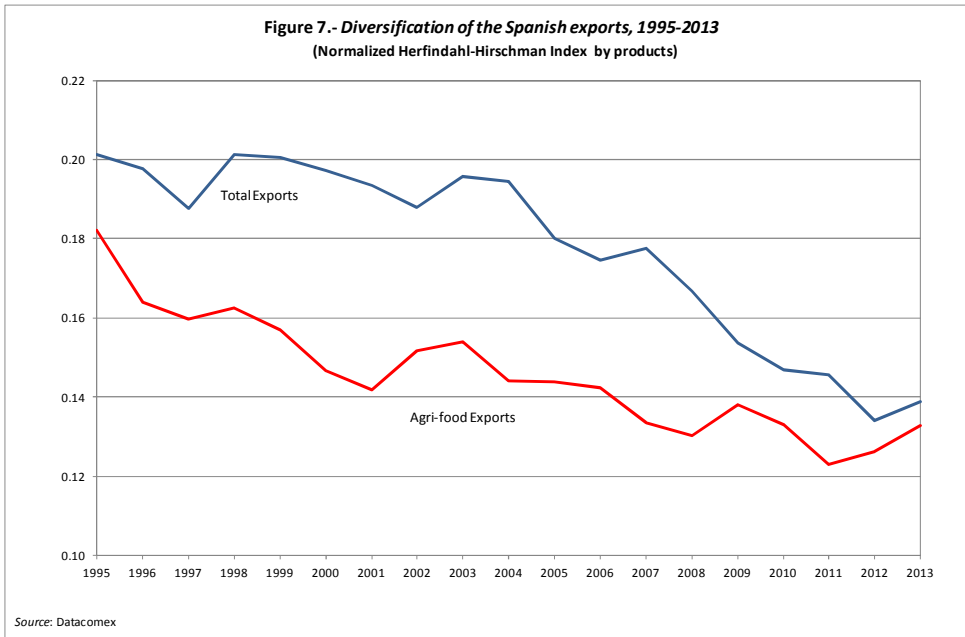
Table 4.- Main clients of Spanish agri-food sector, 1995-2014

(as percentages of the whole world)

			EU Clients			Non-EU Clients		
	1995	2014	2014	2014	2014	2014	2014	2014
Live animals	EU 28 94.8	EU 28 67.8	Portugal 41.5	Italy 12.3	France 7.5	Libya 19.3	Lebanon 6.8	Morocco 2.1
Meat	EU 28 93.7	EU 28 74.8	France 24.4	Portugal 14.9	Italy 9.7	Japan 6.1	China 4.5	South Korea 3.1
Fish	EU 28 68.4	EU 28 71.8	Italy 29.0	Portugal 22.0	France 10.5	Japan 2.3	Ecuador 2.0	USA 1.8
Milk	EU 28 75.2	EU 28 80.8	France 28.5	Portugal 21.7	Italy 12.0	USA 6.3	Andorra 1.3	Algeria 1.2
Other animal products	EU 28 87.5	EU 28 52.2	France 17.4	Germany 8.9	Portugal 5.8	China 17.3	Hong-Kong 10.0	South Korea 4.9
Floriculture	EU 28 87.8	EU 28 79.0	France 25.8	Netherland 13.3	Portugal 13.0	Morocco 10.0	Switzerland 1.8	Algeria 1.2
Edible vegetables	EU 28 94.6	EU 28 93.9	Germany 24.6	France 16.7	U. Kingdom 15.4	Switzerland 1.5	Russia 1.0	Brazil 0.4
Fruits	EU 28 90.8	EU 28 89.1	Germany 22.8	France 19.2	U. Kingdom 11.3	Switzerland 1.8	Russia 1.5	USA 1.0
Coffe	EU 28 52.8	EU 28 58.1	France 12.7	Portugal 11.1	Germany 6.8	Switzerland 11.9	USA 7.4	Mexico 3.7
Cereals	EU 28 58.0	EU 28 75.0	Portugal 26.0	France 12.2	U. Kingdom 10.3	Tunisia 12.5	Morocco 1.9	Turkey 1.6
Milling products	EU 28 22.6	EU 28 79.4	France 31.5	Portugal 29.2	Italy 6.1	Senegal 2.1	Ecuat. Guinea 1.1	Algeria 1.1
Oleaginous fruits and	EU 28 67.4	EU 28 45.9	Portugal 13.9	France 13.4	U. Kingdom 4.2	UAE 30.6	Saudi Arabia 3.0	China 2.6
Gums and resins	EU 28 53.7	EU 28 53.5	Germany 17.0	France 8.1	Denmark 6.4	USA 18.1	Japan 3.3	Mexico 2.9
Plaiting materials	EU 28 78.2	EU 28 78.6	France 35.7	Portugal 26.6	Belgium/Lux. 5.8	Algeria 8.7	Morocco 4.3	Tunisia 1.7
Fats and oils	EU 28 54.8	EU 28 65.0	Italy 33.9	Portugal 10.6	France 8.9	USA 9.1	Japan 2.6	China 2.2
Preparations of meat	EU 28 69.8	EU 28 87.0	Italy 22.2	France 21.8	Portugal 13.7	USA 1.6	Andorra 1.2	Mexico 0.9
Sugar	EU 28 42.7	EU 28 71.7	France 26.8	Portugal 9.5	U. Kingdom 8.3	USA 9.4	Israel 1.8	Canada 1.2
Cocoa	EU 28 55.2	EU 28 65.9	France 19.2	Portugal 12.2	Germany 7.4	USA 4.8	Algeria 3.3	Russia 2.4
Preparations of cereal	EU 28 78.9	EU 28 73.4	Portugal 23.0	France 16.1	U. Kingdom 10.5	Saudi Arabia 4.3	USA 2.7	Switzerland 1.7
Preparations of veget	EU 28 58.8	EU 28 65.5	France 20.3	U. Kingdom 9.7	Germany 8.4	USA 9.8	Russia 4.3	Saudi Arabia 2.1
Miscellaneous edible	EU 28 62.5	EU 28 62.0	France 16.1	Portugal 11.6	U. Kingdom 8.0	Saudi Arabia 3.2	Algeria 2.1	Colombia 1.5
Beverages	EU 28 73.0	EU 28 60.4	Germany 12.0	U. Kingdom 11.5	France 9.4	USA 7.7	Philippines 3.2	Switzerland 3.2
Industrial residuals	EU 28 83.5	EU 28 82.8	France 26.2	Portugal 20.3	Italy 13.2	Saudi Arabia 1.4	Russia 1.1	Algeria 1.1
Tobacco	EU 28 39.9	EU 28 56.4	France 19.4	Portugal 11.3	Germany 6.3	Turkey 14.3	Irak 1.7	Morocco 1.6
Agri-food	EU 28 77.1	EU 28 75.7	France 17.2	Italy 11.6	Germany 11.4	USA 3.5	Japan 1.5	China 1.4
<i>Total Exports</i>	EU 28 70.3	EU 28 62.2	France 15.7	Germany 10.4	Portugal 7.5	USA 4.4	Morocco 2.4	Turkey 2.1

Source: Datacomex

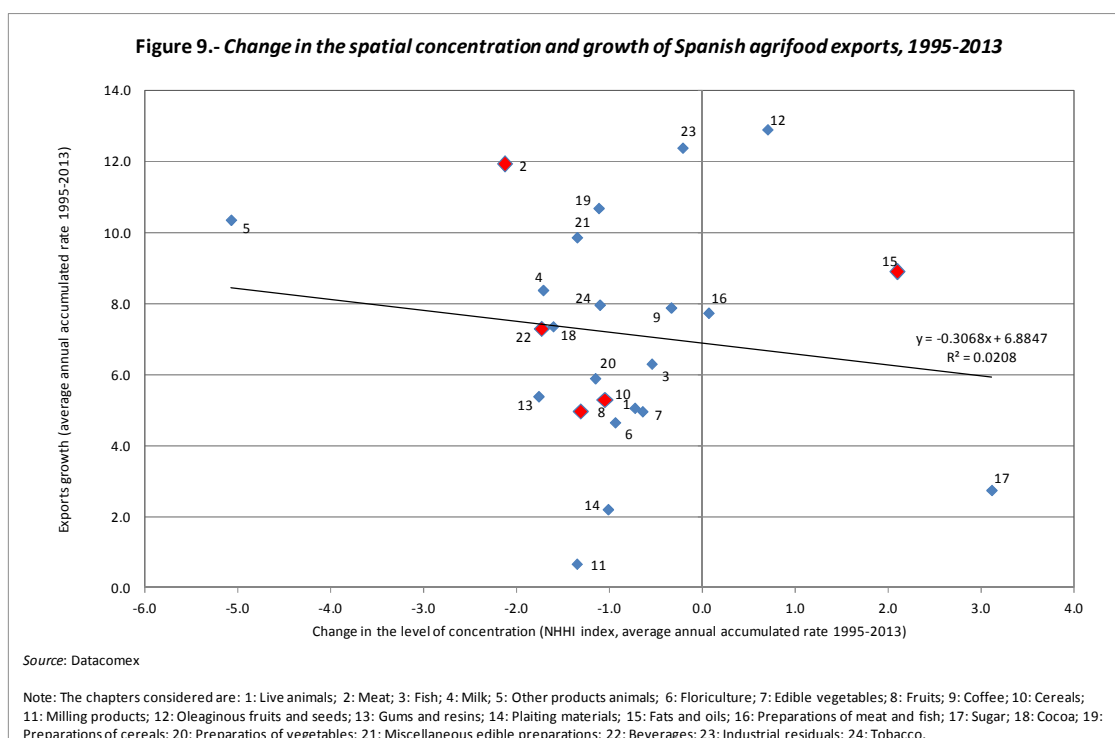
To summarize, although the EU remains as the main customer of Spanish agri-food products in recent years, especially during the economic recession, exports to third countries have grown faster than sales to the EU. This is due firstly to the sluggish demand from EU customers as a result of the recession and, secondly, due to the fact that Spanish companies are making a great effort to diversify target markets.



The estimates of the Normalized Herfindahl-Hirschman Index (NHHI) demonstrate this greater diversification of Spanish trade (by products and clients). Thus, this level of diversification is noticeable to the exportable supply by products that are already fairly diversified (agri-food NHHI by products, 0.18 in 1995 and 0.12 in 2013). Also, this agri-food index by products (and by clients) is lower than that corresponding to total goods (Figure 7).

Regarding customers, the agri-food sector has a lower diversification of buyers than total goods (Figure 8), which is not surprising, as just one sector has been analyzed compared to several sectors in the case of goods; and also the characteristics of some agri-food goods such as Fruits or Vegetables require, as already mentioned, nearby markets, otherwise the quality, condition and appearance may be adversely compromised if the clients are located in distant markets. Research on the elaboration of new products, improved conservation methods and varieties that better withstand the long distance transportation, is already being undertaken to overcome these limitations and open new markets for Spanish exports.

The subsectors that have more diversified destinations (considering only the relevant chapters of Spanish exports) are Beverages and Preparations of vegetables, while Meat, Fish, Fruits and Vegetables are more geographically concentrated. In any case, all sectors evolve towards a greater diversification of customers, with the exception of Fats and oils (with a very erratic behavior, but since the beginning of this century, they also demonstrate more diversity in regard to destinations).



To conclude, Figure 9 shows the relationship between the degree of spatial trade concentration and the growth of exports. Although it seems that there is a strong correlation between these variables, it can be said that, with the exception of Oil seeds,

Fats and oils and Sugar, the sectors that have experienced the highest growth are those that have diversified their customers to a higher level.

5.- Conclusions

The agri-food sector is, after the automotive sector, the activity that contributes the most to the export of goods in Spain. Fruits, Vegetables, Beverages, Fats and oils, Meat, Fish and Preparations of fruits and vegetables represent three-quarters of the sales to foreign markets. Exports come mainly from the Mediterranean corridor: Andalusia, Murcia, the Valencian Community and Catalonia, whose contribution is two-thirds of total sales abroad.

The specialization of Spanish exports focuses primarily on important dynamic chapters in international markets. However, although the strong dependence on the European market, with a very concentrated percentage of foreign sales, has undoubted advantages (the leverage of a dynamic and wide market with high levels of income), it also introduces some elements of vulnerability and causes losing market share in view of the high competition in the area.

To overcome these problems, it is necessary to make advances in several issues: firstly, the multiplication of customers, increasing penetration of domestic products in countries like the US, Japan, China, Russia and other emerging markets with undoubted growth potential (Myro, 2013); secondly, by the diversification of exports, whether by increasing the sale of goods with little presence in national exports or by seeking new products in agriculture or industry to adapt to changing consumer demands which can resist transportation to distant markets, one of the weaknesses of our current export specialization. Also in this respect, research becomes a relevant element that will help to consolidate and improve the current position of Spain in world markets.

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