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SYNTHESIS AND CONCLUSIONS

Within the world food industry, the fruit and vegetable sector has a relatively modest market place with €160 billion sales in 2002 (6%). In EU-25, this sector reaches €48 billion sales (a little less than the USA) and 264 000 workers. Germany is the leader in Europe with €7.6 billion sales in 2001, followed by Italy, France and United Kingdom with €1 billion. We find in decreasing order: Netherlands, Poland, Belgium, Greece and Sweden. Portugal, the fifth European country reaches a little less than €500 million (from our estimate). The southern countries occupy 44% of the total activity and 39% of the labour force of the EU-25 fruit and vegetable industry, which make them a big challenge in the outlook of the European Mediterranean free trade area.

This activity is characterized on the world level by a technological, economical and commercial gap in comparison with the other fields of the food industry such as the feed or the milk industries. Consequently, the “top 100” of the world food counts only four firms: Dole, Del Monte, Chiquita and Fyffes whose average sales are US\$3.5 billion versus 8.6 for the first one hundred food companies. The average productivity of the labour is twice less than the previous one and the rate of net margin (net profit/sales) is 4% versus 6%. We note also a less concentration of the sector: in the States, the share of the 4 first companies is 25% in the processed fruit and vegetables versus 80% in the chocolate industry and in the breakfast cereal industry. It is in fact a sector where the tangible and intangible investments are less.

This characteristic can be found again on **the consumption level**. The market place for fresh and processed fruit and vegetables amounts to 10 and 25% of the total food expenses according to the countries. We must here outline the paradox (to avoid saying the stupidity) of the super-consumption of some harmful products (fatty foods, sugar) to the detriment of fruit and vegetables. Indeed, the nutritionists have demonstrated that fruit and vegetables are essential to fight some food illness (such as heart strokes, diabetes, alimentary canal cancers, fatness...). The relative prices, due to farm policies not connected to food considerations, are presently in the agro-industrial countries unfavourable to fruit and vegetables. We note that the consumption of processed fruit and vegetables is up to now (for these countries) highest than that of fresh products (about 53% in equivalent fresh in the States, average 2001-2003). However, the growth rate of the fresh fruit and vegetable consumption is now highest than one of the processed products: 20% versus 15% on the period 2000-2004 in France.

The international trade for the PF&V is nearby, in annual average for 2000-2003, €29 billion while the fresh products outpace 50 billion. The growth rates are the same for both categories, i.e. 54% and 52% on a basis 1992-94. The EU-15 is by far the first exporter of PF&V with \$13 billion in 2001-2003, i.e. 45% of the world total, followed by NAFTA with \$4.2 billion (15%). However, if we take off the intra-area exchanges, it is the great China which dominates (up to now) the export flows with

21% versus 20% for the EU-15, 14% for NAFTA and 10% for MERCOSUR. The countries from southern and eastern Mediterranean (CSEM) are only number 5 with 9%.

The big import areas are the EU-15 (35% of the world imports, exclusive of intra-regional sales). China and MERCOSUR are just 1%. Consequently, the EU is the leader as well in the PF&V international trade as in the fresh F&V. We note that the EU balance of the foreign trade is strongly negative (-\$2 billion in 2001-2003), specially for the fresh fruit and vegetables, due mainly to citrus and pineapples. With 4% of its exports exclusive of EU area (\$116 billion) and 16% of its imports (767 billion), the CSEM do not represent a strategic outlet for the EU (in 2001-2003). Conversely, China, even if this country does not represent a significant outlet for EU (less than 0.5% of its exports towards other countries in 2001-03), knows a very quick growth of its exports towards the EU (+ 171% during the last ten years, versus + 115% for the rest of the world).

The fruit juices and frozen vegetables are in 2001-2003 the two first exported products by EU for an amount of \$3 billion each. However, the international sales dynamics is three times less for EU than for the world (with a growth of 22% between 1992-94 and 2001-2003, versus 64%) for the fruit juices and 13 times less for the frozen vegetables (respectively 142 and 11%) and this, in spite of a better product valorisation. The average price for the P&FV amounts to 870\$/t for the EU and 830\$/t for the world, i.e. a gap of 5%.

The institutional framework of the PF&V sector is made up by a common market organisation (CMO) (Agreement 2201/96). This CMO, similar to the fresh fruit agreement was created in 1996. It is oriented towards the market regulation and the protection of income situation of raw material producers through the producer organisations (POs). However, the number of POs remains very low (about 50 over 1500) and the financial subsidies very modest (€720 million in 2003). Tomatoes and citrus destined to the processing captures the $\frac{3}{4}$ of subsidies granted to the PF&V sector, mainly for some structural actions (concentration of supply, upgrading of equipments and marketing), while, as for the farming as a whole, the measures on prices, subsidies to exports and withdrawals aim to disappear. We have to remind that the payments of the EAGGF are distributed on a political basis. The fruit and vegetable production that represented in 2003 about €74 billion (base price), i.e. 26% of the farm total production of EU, received only 4% of the heading "expenses of the Common Agricultural Policy" (with the exclusion of the farm development), i.e. €1.5 billion.

There is a professional organisation for the PF&V sector, through the (field) syndicates of the European countries as a whole. On the EU level, we find the European Organisation for Fruit and Vegetable Industries and the Association for Natural Juices Industries. The points presently discussed with the Commission deal with the additives and residues, the effects on health, the type of communication campaigns (effects on the consumer) and, of course, the modification of the CMO to be planned in 2006.

In order to estimate **the impact of the world trade liberalization** on the EU Mediterranean areas, we used the method devised for the fresh food sector (Cf. report 1- WP2). The theoretical approach is borrowed, not from the neo-classical current of the competitive positioning of countries on the world level, but from the approaches of the management sciences, that is to say the “Resource-based view”. We adopt a comparative method on the regional basis (an area more homogeneous and more significant than the country), of bench marking type (or assessment of performances by comparing entities of the same sub-system), whose first step consists in building a function “score” combining the 4 identified strategic parameters, so called RVI (regional vulnerability index)¹. Afterwards, it is possible to proceed to a hierarchical classification of areas, which results in a strengths/weaknesses diagnostic and some suggestions.

The function “score” combines the 4 strategic parameters, which are, each one, subject to a quantification from a range of indicators:

Regional Vulnerability Index

Strategic parameters	Indicators
Structure and performances of processing units (SPPU)	Dynamism: size, growth, autonomy and financial leverage, Economic and financial performances Cost-competitiveness
Density and quality of marketing operators: central buying offices (DQMO)	Size, financial autonomy, rate of net profit, solvability
Regional specialisation in the food industry (RSFI)	Number of units in the food industry, labour force
Constraints of the economic and institutional regional environment (CEIRE)	Population density, purchasing power, intra and extra transportation flows, R&D expenses

The Regional Vulnerability Index is inversely proportional to the total of the score of each parameter. It is calculated by using the following equation:

$$IVR = 1 / [(SPPU) \times \alpha + (DQMO) \times \beta + (RSFI) \times \lambda + (CEIRE) \times \theta]$$

$\alpha, \beta, \lambda, \theta$ being weighting coefficients.

The regions that have been listed for calculating the index are those that made the most important average annual sales during the period 2000-2004: as a whole 63 European regions² counting 1128 specialised firms in the processing of fruit and/or vegetables and making a production of about €16 billion in annual average.

¹ The theoretical justification of this approach is the following: the vulnerability is one way to study the risk of a sector failure in front of an external event (for instance the removal of tariff barriers). Finally, the vulnerability is an estimate of the sector “resilience” (Cf. Nussbaum M.C. and Sen A., 1993).

² Owing to the presence and strong activities of multi-regional groups, we took into account in France some non Mediterranean regions such as Brittany or Ile de France, i.e. 15 regions over 22.

Listed European regions for the calculation of the RVI

Countries	Number of regions	Number of PF&V firms	Total sales (million of euros)	Distribution (%)
France	15	179	5 989	37,3
Italy	15	310	3 563	22,2
Spain	15	293	3 138	19,5
Greece	11	316	3 026	18,9
Portugal	7	30	335	2,1
Total	63	1 128	16 052	100,0

The analysis of financial and economical data of commercial and industrial firms coming from Amadeus shows that the French firms and, in a less measure, Spanish and Greek ones, are more efficient than the Italian and Portuguese. The score-functions for the two types of firms are the following:

Score of processed fruit and vegetable firms in 63 regions of the 5 European countries, average 2000-2004

Countries	Industrial firms			Marketing firms		
	Score	3 efficient regions	3 vulnerable regions	Score	3 efficient regions	3 vulnerable regions
France	12.19	Ile de France Nord-PdC Bretagne	Picardie Champagne Midi-Pyr.	6.06	Languedoc Alsace Pays-Loire	Lorraine Centre Bretagne
Greece	6.48	Iles Egée Attique Péloponèse	Centre Corfou Macédoine	4.71	Macédoine	Attique
Spain	4.96	Navarre Estrémadure Castille	Aragon Madrid Galice	4.12	Asturies Aragon Murcie	Navarre Castille PaysBasque
Italy	0.52	Toscane Vénétie Piémont	Marches Calabre Emilie-Ro.	2.64	Trente Piémont Latium	Abruzzes Marches Pouilles
Portugal	-0.07	Beira int. Lisbonne Beira lit.	Alentejo Algarve Ribatejo	2.46	Algarve Ribatejo Entre Douro	Beira int. Lisbonne Beira lit.
Total	5.00			4.00		

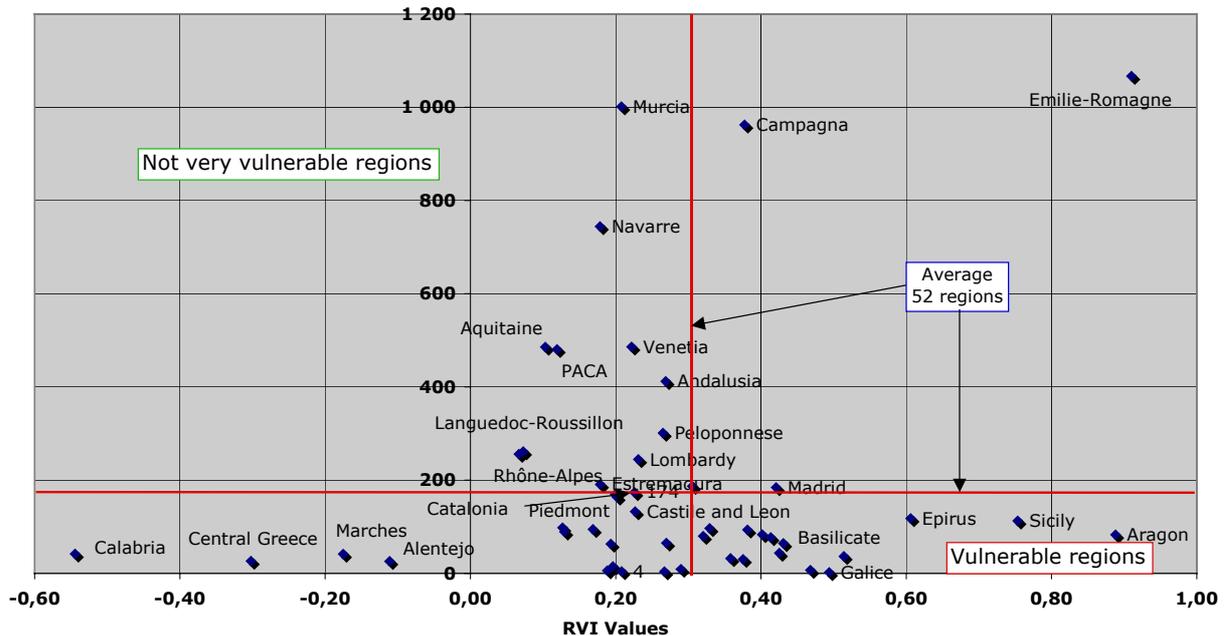
The regional specialisation in the food industry is measured in relation to the manufacturing industry as a whole from the number of firms and the labour force. We find according to this indicator a similar classification to the previous one: Greece arrives first with a 2.40 score, followed by France (2.76), Spain (1.81), Italy (1.38) and finally Portugal (1.44). Three Greek regions (Iles Ioniennes, Crete, Peloponnese) and 2 French regions (Languedoc-Roussillon and Brittany) have an index highest than 4.

Concerning the economical environment population density and transportation density index, the regions can be classified in relation with the level of life: France (score 10.39), Italy (8.01), Spain (6.59), Greece (5.1) and Portugal (4.89). The gap between the first (Rhônes-Alpes in France) and the last one (Iles Ioniennes in Greece) is very large (from 1.9 to 42).

It was possible to calculate the weighted vulnerability index for 52 regions over 63³. The RVI of these regions fluctuates from 2.86 (Western Macedonia, the most vulnerable region) to -1.19 (Eastern Macedonia, the less vulnerable region), i.e. a gap of 4.05 around an average of 0.3 and a median 0.23, which finally makes the method more credible, given the convergence phenomena observed in the long run between the 15 countries of the EU. A point cloud diagram set up between the dimension of regions (measured through the sales of the fruit and vegetable processing industry) and the RVI leaves appear 12 relatively specialised regions as very vulnerable (Sicily, Basilicate, Abruzzes, Puglia in Italy ; Epire, Western Macedonia, Thessalie, Crete in Greece ; Aragon, Galice, Madrid in Spain ; Entre Douro, Ribatejo, Beira litoral in Portugal). At the contrary, Rhône-Alpes, Languedoc-Roussillon, Aquitaine, Provence-Alpes-Côte d'Azur in France ; Piémont, Vénétie, Lombardie in Italy and Navarre in Spain appear as important regions owing to their activity and, at the same time, less exposed to the competition. Emilie-Romagna, first region for its sales, seems relatively threatened due to the poor economical performance of the sector firms.

³ Due to a lack of agro-climatic homogeneity and the presence in Algarve of a non correct RVD (- 15, while the 5 country average is + 2), we eliminated in the panel 10 non Mediterranean French regions and a Portuguese one (Algarve).

**RVI for the processed Fruit and Vegetables sector in the EU Mediterranean countries
(2000-2004)**



The limits of the RVI have to be researched first in the regional carving up resulting from administrative and political choices rather than agro-climatic criteria. Consequently, the farm and agro-food production areas are not very well isolated. Secondly, given the unequal quality of information and specially the type of firm activities, very often diversified along the commodity system, it was impossible to distinguish the first, second and third processing level activities. This is very prejudicial since each level corresponds to different cost structures (the profit increases as we are getting closer with the consumer). Thirdly, the central buying offices function now, most of the time, on a national basis and, moreover, their processed fruit and vegetable activities represent a very low % of the sales. Finally, the population variables (economic wealth, R&D, transport infrastructures) that were used to calculate one of the RVI score, are not specific to the sector.

In spite of these restrictions, the “benchmarking” such as practised between fifty regions from the southern EU (more or less specialised in the fruit and vegetable processing) seems, with some exceptions⁴, pertinent in the relative positioning of regions. The hypothesis according to a strong specialisation makes fragile a region can be counter-balanced by the advantages of the “size” and should lead, in some cases, to some more positive scores concerning for example Emilie-Romagne or Andalusia.

⁴ We think for example to 2 French regions (Provence-Alpes-Côte d’Azur and Languedoc-Roussillon) whose scores appear elevated while this area registers numerous firms (specially cooperatives) in big troubles. One explanation can be found in the databases that do not take into account some types of firms. But other interpretations can be advanced: the elimination of the first processing and the development of second and third processing activities.

The study concerning **the processed tomatoes** in 5 EU Mediterranean countries aims to describe the impact of trade liberalization for farm and food products between the EU-15 and the Mediterranean countries on the southern part of the EU (Portugal, Spain, France, Italy and Greece). The selected activity to be studied is the processing tomato industry (tomato paste, puree, sauces and ketchups, canned tomatoes). To do that, after using a double approach (“filiere” or commodity system and industrial economics), we present three case studies: the Consorzio Interregionale Ortofrutticoli (or CIO) located in Parma, the Company Louis Martin in the north of Avignon and Alimentos Espanoles SL (or Alsat) located in Don Benito (Badajoz). The main conclusions are the following: the EU processing tomato industry will continue and probably expand its activities on the Mediterranean borders; however, the competition between Italy and Spain will increase; the southern part of France risks to lose its first-level processing activities; specialization of work within the European space will intensify, the southern part being specialized in the production of raw materials and the northern part in sauces, ketchups and high value added products (Netherlands is the biggest ketchup producer); the Greek and Portuguese activities will carry on. Three types of reasons can be advanced: first, because the raw materials have to meet some very precise standards; secondly, because some activities (such as the making of tomato pastes) are highly mechanized along the “filiere” and, finally, because second and third processing level products which are changing very quickly (relative to packaging, recipe and process techniques) require a good logistics and flexible services. Relative to the later aspects, it’s often better to produce close to the consumption areas (ketchup).

In summary, the potential commercial flows resulting from a decreasing of the EU tariff barriers in matter of PF&V (coming from southern and eastern Mediterranean countries) seem limited and represent only a small fraction of the productions of southern EU regions. On the other hand, as it was demonstrated in the case study, the upgrading of some outstanding firms in Spain and in Italy permitted to reach some high levels of competitiveness (but not in France) and leads to strengthen the previous point of view⁵. The danger seems coming mainly from the north of Europe (see the example of ketchup in Netherlands) and, of course, from the “new Mediterranean countries” such as Australia, Chile, California as it was observed on the world wine market. The presence of these new competitors should have to create a debate on the strategic positioning of the fruit and vegetable industry (in all aspects, including northern and southern Mediterranean) and this, in order to maintain or to recapture some market shares for high typical products.

⁵ However, it is difficult to generalize since the firms have been selected in relation to the quality of their management.