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PU	Public	PU
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
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INTRODUCTION

The aim of this document is to compare the estimations of the CAPRI model for the period 2001-03 to 2013 with the calculations of a regional vulnerability index (RVI) for a certain number of European regions, in accordance with the project described in the methodology of the EuMedAgpol programme of comparing a “top down” modelling strategy and an “bottom up” evaluation strategy.

The CAPRI model provides data concerning the revenue of fresh fruit and vegetables producers, variable production costs, subsidies received and – by subtraction – the gross margin generated by producers. These data are estimated for the timeframe of 2013 for 4 scenarios relating to agreements on international trade:

- Status quo (“with the flow”)
- Total liberalisation
- Partial liberalisation
- Mixed

The figures are calculated for 76 regions (nuts 2) in 5 Mediterranean countries in the EU-25: France, Greece, Italy, Portugal and Spain.

The RVI is an index of the sensitivity of Mediterranean regions within the EU to the impact of international trade liberalisation (intensified competition) calculated using 5 types of variable:

- Economic performances of entities specialising in the production of fruit and vegetables (turnover, growth of turnover, investment, fixed and variable costs, labour costs, gross operating income/turnover mark up, labour productivity)
- Official quality labels for fresh produce (indication of geographical origin)
- Economic performances of fruit and vegetable processing firms
- Economic performances of fruit and vegetable marketing firms (wholesalers)
- Population and wealth, transport infrastructures, investment in R&D

The period covered is 1995-2002, 2003 or 2004, depending on the indicator.

The figures are calculated for 34 regions (nuts 2) in 5 Mediterranean countries in the EU-25 (France, Greece, Italy, Portugal and Spain) for fresh fruits and vegetables, 63 regions for processed fruit and vegetables and 30 regions for both types of product.

CAPRI/RVI COMPARISON

The RVI is a measurement of vulnerability or the relative competitiveness of each region, as the index is based on the performances of firms and the quality of their economic environment in a given competitive context (the European market at the start of the 2000s).

The CAPRI model estimates the production variations resulting from hypotheses of international trade liberalisation using elasticity of supply in relation to price and demand.

Consequently, it is possible to see if the ranking of the regions according to the CAPRI model corresponds to that based on the RVI values. Convergence of the two sets of rankings (variation of income and RVI) would suggest that the calculations are reliable, thereby confirming a higher or lower level of sensitivity to the impact of liberalisation for a given region. Divergence of the two sets of rankings would imply uncertainty concerning the potential development of the region.

Table 1 - Capri and IVR comparability for fresh F&V sector

Country	Capri 2001-03		Wp2 - RVI 1999-2003		
	Total revenue (2013 m. €)	Production in 34 regions (m. €)	Total production (m. €)	Production in 34 regions (m. €)	IVR/Capri in 34 regions
ESPANA	12,954	10,122	10,487	4,979	49%
ITALIA	11,965	10,002	9,888	3,474	35%
FRANCE	7,059	3,368	6,927	2,378	71%
ELLADA	3,547	1,359	3,304	728	54%
PORTUGAL	1,999	1,992	1,732	324	16%
Total	37,524	26,843	32,338	11,883	44%
<i>Source: University of Bonn, 2006, Capri Model and UMR Moisa WP2</i>					

The two databases would appear to be compatible: the total production levels are similar (intersecting periods but different price bases) and the sample of regions used to calculate the RVI is large enough in terms of turnover (44% for the 5 countries)¹.

For CAPRI, given that the 4 liberalisation scenarios provide very similar results, we will adopt the total liberalisation scenario and consider the variation in the income of horticultural-fruit farms as an indicator of sensitivity to the removal of tariff protection. Comparison with the ranking based on the RVI shows that in 23 of the 34 regions in the sample adopted, the 2 indicators converge and that this convergence is more evident in high-performing regions than in vulnerable regions. These indications are interesting but must be qualified, and suggest that the major uncertainties concern the more vulnerable regions.

The table below ranks the regions according to the level of convergence of the results from the Capri and RVI models.

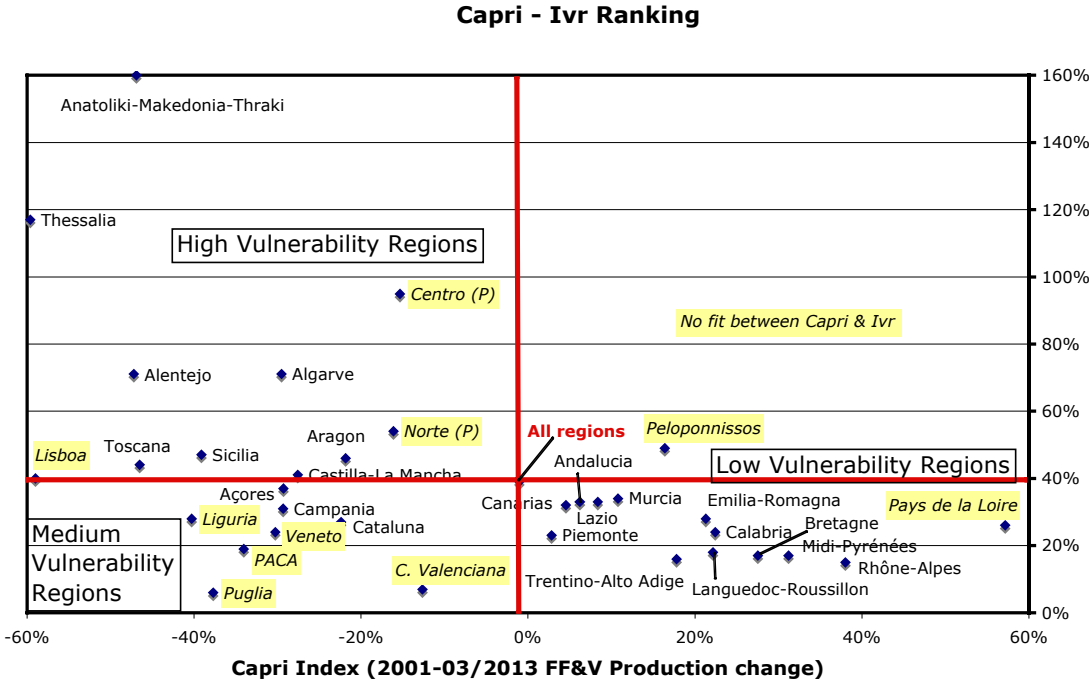
Table 2 – Ranking of the EU F&V regions

Convergence of Capri/RVI indicators	Number of regions
Good	15
Medium	8
Poor	11
Total	34

¹ We observe a large discrepancy for one region: Castilla-La Mancha. In this region, Capri provides an average value for the production of fruit and vegetable of 2,270 m. € for 2001-03 whereas IVR indicates a production of 42 m. € for 1999-03. After checking the Rica database, the Capri figures are shown to be incorrect. Other significant differences can be observed in 6 regions: Peloponnese, Central Greece, Liguria, Alentejo, Centre-Portugal and Lisbon; as well as for Portugal as a whole (cf. Appendix 1).

From this, we can identify a regional typology according to the level vulnerability, with 4 distinct groups of regions:

- 8 high-vulnerability regions (Capri index represented by a fall in value of between 0 and 60% in production of fruit and vegetables for the period 2001-2013 and RVI between 0.4 and 1.6): Thessalia, Alentejo, Anatoliki-Makedonia-Thraki, Toscana, Sicilia, Algarve, Castilla-La Mancha, Aragon.
- 3 mid-vulnerability regions (Capri between - 50 % and 0 % and RVI between 0 and 0.4): Azores, Campania, Cataluna.
- 12 low-vulnerability regions (Capri between 0 and 60 %, RVI between 0 and 0.4): Piemonte, Canarias, Lazio, Andalucia, Murcia, Trentino-Alto Adige, Emilia-Romagna, Languedoc-Roussillon, Calabria, Bretagne, Midi-Pyrénées, Rhône-Alpes.
- 11 high-uncertainly regions resulting from the divergence of Capri and RVI: Lisboa, Liguria, Puglia, PACA, Veneto, Norte (P), Centro (P), Comunidad Valenciana, Peloponnissos, Pays de la Loire, Sterea Ellada.



CONCLUSION

The Capri model provides a 2001-03 base for the production of fruit and vegetables and enables us to simulate the effects of a large or small reduction in border tariff protection on the production of fresh fruit and vegetables in 5 Mediterranean countries in the EU (France, Greece, Italy, Portugal and Spain) for the timeframe of 2013.

The regional vulnerability index (RVI) is a composite index which enables us to estimate the relative level of competitiveness of the Euro-Mediterranean regions for the period 1995-2003. For the 34 regions which produce fresh fruit and vegetables, it ranges from 0.06 to 1.6.

Comparison of these 2 indicators enables us to assess the relevance of the evaluations performed using both models. If the measurements are convergent, we can assume that the estimations are reliable (for example if a region records a significant progression in its production and demonstrates a low RVI, which is an indicator of a high level of competitiveness). For the 34 regions analysed, 23 demonstrate convergence of the 2 indicators while 11 demonstrate divergence. For these 23 regions with reliable estimations, 8 are highly vulnerable (primarily in Greece and Portugal), 3 demonstrate medium vulnerability and 11 a low level of vulnerability (or a high level of competitiveness, primarily in France and Italy).

ANNEXE 1

CAPRI and IVR Models Comparison

FRUITS and Vegetables						
Region	CAPRI Model			IVR Model		Ivr-Capri Production Gap
	2001-03 Baseyear	2013 Forecast - Full Liberalisation Scenario		1999-2003		
	Revenue (Mn € 2013)	Revenue (Mn € 2013)	2001-03 / 2013 Change	FF&V Turnover (Mn €)	IVR FF&V	
ANATOLIKI MAKEDONIA THRAKI	320	170	-47%	234	160%	73%
PELOPONNISOS	36	42	16%	222	49%	614%
STEREA ELLADA	39	167	323%	193	43%	490%
THESSALIA	963	389	-60%	79	117%	8%
ELLADA	1 359	768	-44%	728		54%
ANDALUCIA	2 083	2 256	8%	2 261	33%	109%
ARAGON	1 264	988	-22%	172	46%	14%
CANARIAS	274	287	5%	205	32%	75%
CASTILLA-LA MANCHA	2 270	1 644	-28%	42	41%	2%
CATALUNA	711	551	-22%	275	27%	39%
COMUNIDAD VALENCIANA	2 501	2 185	-13%	1 259	7%	50%
MURCIA	1 019	1 129	11%	765	34%	75%
ESPANA	10 122	9 041	-11%	4 979		49%
BRETAGNE	330	421	28%	243	17%	74%
LANGUEDOC-ROUSSILLON	515	629	22%	359	18%	70%
MIDI-PYRENEES	620	813	31%	155	17%	25%
PAYS DE LA LOIRE	489	769	57%	304	26%	62%

PROVENCE-ALPES-COTE D'AZUR	630	415	-34%	819	19%	130%
RHONE-ALPES	784	1 082	38%	497	15%	63%
FRANCA	3 368	4 129	23%	2 377		71%
CALABRIA	902	1 104	22%	126	24%	14%
CAMPANIA	666	471	-29%	489	31%	73%
EMILIA-ROMAGNA	1 109	1 345	21%	544	28%	49%
LAZIO	532	565	6%	249	33%	47%
LIGURIA	57	34	-40%	262	28%	459%
PIEMONTE	584	601	3%	126	23%	22%
PUGLIA	1 075	670	-38%	156	6%	15%
SICILIA	2 158	1 314	-39%	688	47%	32%
TOSCANA	772	413	-47%	121	44%	16%
TRENTINO-ALTO ADIGE	934	1 100	18%	439	16%	47%
VENETO	1 212	845	-30%	273	24%	23%
ITALIA	10 002	8 462	-15%	3 473		35%
ACORES	10	7	-29%	11	37%	113%
ALENTEJO	900	475	-47%	40	71%	4%
ALGARVE	254	179	-29%	40	71%	16%
CENTRO (P)	440	373	-15%	37	95%	8%
LISBOA	65	27	-59%	165	40%	254%
NORTE	324	271	-16%	31	54%	10%
Portugal	1 992	1 332	-33%	324		16%
5 COUNTRIES	26 842	23 732	-12%	11 881		44%
<i>Source : University of Bonn, 2006, Capri Model and Ayadi et al., 2005</i>						

ANNEXE 2

CAPRI & IVR RANKING FIT

Region	CAPRI Model		IVR Model		Rank gap	Fit
	2013 Forecast - Full Liberalisation Scenario	CAPRI Ranking	1999-2003	IVR Ranking		
	2001-03 / 2013 Change		IVR value			
STEREA ELLADA	323%	34	43%	11	-23	-
PELOPONNISOS	16%	25	49%	7	-18	-
CENTRO (P)	-15%	18	95%	3	-15	-
NORTE	-16%	17	54%	6	-11	-
PAYS DE LA LOIRE	57%	33	26%	23	-10	-
MURCIA	11%	24	34%	15	-9	**
ALGARVE	-29%	11	71%	4	-7	**
ANDALUCIA	8%	23	33%	16	-7	**
ARAGON	-22%	16	46%	9	-7	**
EMILIA-ROMAGNA	21%	27	28%	20	-7	**
CALABRIA	22%	29	24%	24	-5	***
LAZIO	6%	22	33%	17	-5	***
ANATOLIKI MAKEDONIA THRAKI	-47%	4	160%	1	-3	***
CANARIAS	5%	21	32%	18	-3	***
CASTILLA-LA MANCHA	-28%	14	41%	12	-2	***
MIDI-PYRENEES	31%	31	17%	29	-2	***
BRETAGNE	28%	30	17%	30	0	***
LANGUEDOC-ROUSSILLON	22%	28	18%	28	0	***

RHONE-ALPES	38%	32	15%	32	0	***
ACORES	-29%	13	37%	14	1	***
SICILIA	-39%	7	47%	8	1	***
THESSALIA	-60%	1	117%	2	1	***
ALENTEJO	-47%	3	71%	5	2	***
TOSCANA	-47%	5	44%	10	5	***
TRENTINO-ALTO ADIGE	18%	26	16%	31	5	***
PIEMONTE	3%	20	23%	26	6	**
CAMPANIA	-29%	12	31%	19	7	**
CATALUNA	-22%	15	27%	22	7	**
LISBOA	-59%	2	40%	13	11	-
COMUNIDAD VALENCIANA	-13%	19	7%	33	14	-
LIGURIA	-40%	6	28%	21	15	-
VENETO	-30%	10	24%	25	15	-
PROVENCE-ALPES-COTE D'AZUR	-34%	9	19%	27	18	-
PUGLIA	-38%	8	6%	34	26	-
Total	-1%		39%			
- / No convergence; ** / Medium convergence; *** / Good convergence between Ivr and Capri						
<i>Sources : University of Bonn, 2006, Capri Model and Ayadi et al., 2005</i>						