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Introduction

The present Study is elaborated under the Action 3.3 **"Market Analysis"** of the project ***"AGROQuality: Towards a Common Quality Control and food chain traceability system for the Greek – Italian primary sector of activity",*** which is co-financed by the European Union (European Regional Development Fund) and National funds.

Modeling and placing Quantitative Rules is a self-evident need in most substantial human activities. Thus initially we have adopted the Electronic Health Record for Humans and the Animal Health Certificate for animals and livestock.

The rational following question *"how can we issue a health certificate for plants?"* is the core question for the AGROQuality project, which leads the initial concept and the overall development.

The core objective of the present Document is to guide the development of the AgroQuality Electronic Cultivation Record.

The present Deliverable is being elaborated along with the whole series of studies (D3.1.1-D3.2.2) of the project. The intermediate and final findings of these studies will be further processed for the detailed features of the AGROQuality ECR specification.

Chapter 1: The Olive Cultivation in Epirus, Greece and the World

Part A: EPIRUS

A1. The Socio-economic Geography of Epirus

The Region of Epirus covers, geographically, the North Western part of Greece. It is surrounded by the Ionian Sea in the West, Macedonia and Thessaly in the East, the Amvrakikos Gulf in the South and Albania in the North. Epirus covers an area of 9.203 km^2, which represents the 6,7 % of the country's area. Its population is 335.856 habitants (census 2011), representing 3,54 % of the country's total population and is allocated in four (4) Regional Unities:

Table 1. Population of Epirus' Regional Unities

Ioannina	167.901
Arta	67.877
Preveza	57.491
Thesprotia	43.587
Total – Epirus	335.856

Source: ELSTAT[1] (Census 2011)

The 74% of Epirus' total surface area, namely 7.080 s.km corresponds to mountainous areas, 15% to semi-mountainous areas and only 10% to lowland ones.

Table 2. Mountainous – Semi-mountainous and Lowland Areas of Epirus

	MOUNTAINOUS	SEMI-MOUNTAINOUS	LOWLAND
ARTA	65,63%	10,59%	23,78%
THESPROTIA	66,50%	28,27%	5,23%
IOANNINA	85,28%	11,38%	3,34%
PREVEZA	46,50%	20,73%	32,77%
EPIRUS	74,27%	15,07%	10,66%
GREECE	42,30%	28,88%	28,82%

One of the Regions' main disadvantages is its geographical isolation, which, partly, is expected to be moderated by the construction of the Ionian Road.

[1] ELSTAT - (http://www.statistics.gr/)

According to the NDP (3908/2011), Epirus is classified in Zone C, receiving the maximum reinforcement percentage (40-50%).

Epirus' GDP

Epirus is one of the poorest Regions in the European Union. Its GDP corresponds approximately to 55% of the European Union's average. Epirus' totally produced GDP for 2011 is 5.079 thousand Euros representing the 2,2% of the country's total GDP.

Table 3. GDP per Region (2011, in thousand Euros)

ATTIKI	110.546
CENTRAL MACEDONIA	32.285
THESSALY	11.608
CRETE	11.243
WESTERN GREECE	10.659
CENTRAL GREECE	10.537
PELOPONNESE	9.809
EASTERN MACEDONIA AND THRACE	9.265
SOUTH AEGEAN	7.646
EPIRUS	5.079
WESTERN MACEDONIA	5.506
IONIAN ISLANDS	4.130
NORTH AEGEAN	3.330
TOTAL GREECE	**231.643**

Source: ELSTAT 2011

Table 4. Per Capita GDP per Region (2011, in Euros)

ATTIKI	26.968
SOUTH AEGEAN	24.828
CENTRAL GREECE	19.007
WESTERN MACEDONIA	18.786
CRETE	18.421
IONIAN ISLANDS	17.726

NORTH AEGEAN	16.638
PELOPONNESE	16.580
CENTRAL MACEDONIA	16.559
THESSALY	15.772
EASTERN MACEDONIA AND THRACE	15.272
WESTERN GREECE	14.332
EPIRUS	14.221

Source: ELSTAT

Table 5. Per Capita GDP Per Regional Unity (in Euros)

THESPROTIA	16.786
PREVEZA	14.168
IOANNINA	13.246
ARTA	12.818

Source: ELSTAT 2010

Employment

The unemployment rate in Epirus follows the country's average rate, which is continuously increasing the last years, and it holds one of the first standings among Greece's Regions (Table 6) and Europe's as well. Regarding the youth unemployment Epirus is among the last ten (10) Regions in the European Union (Source: Eurostat).

Table 6. Unemployment rate per Region

	2010	**2011**	**2012**	**January 2014**
EASTERN MACEDONIA AND THRACE	14,2	22,7	22,5	30,4
CENTRAL MACEDONIA	19,5	24,7	26,0	30,4
EPIRUS	16,7	20,6	22,9	30,0
WESTERN MACEDONIA	23,2	28,5	29,9	30,0
ATTIKI	17,6	22,9	25,3	27,9
THESSALY	16,8	20,4	22,6	26,3
CENTRAL GREECE	18,9	23,3	27,8	26,3

WESTERN GREECE	17,3	23,1	25,5	25,6
PELOPONNESE	14,2	19,0	19,9	25,6
IONIAN ISLANDS	14,2	14,0	14,7	25,6
CRETE	15,4	23,4	21,7	25,0
NORTH AEGEAN	14,3	19,6	21,2	25,0
SOUTH AEGEAN	15,0	24,3	15,1	25,0

Source: ELSTAT

Table 7. Unemployment rate per Regional Unity

	Total Unemployed
IOANNINA	7.750
ARTA	3.125
PREVEZA	2.371
THESPROTIA	1.917

Source: Eurostat 2008

Aging Index

The aging index follows a constantly upward trend the last fifty (50) years. More specifically, for the Regional Unity of Arta, the aging index was 34,1 in 1951 and reached 152 in 2003. The figures are more or less the same for the other three Regional Unities of Epirus. The Regional Unity of Preveza has the lowest aging index (122).

A2. The Primary Sector in Epirus

Epirus has the highest employment rate in the Primary Sector that includes all the agricultural activities, comparing to all the Regions of Greece.

Table 8. Employment rate per Sector in the Regions of Greece

	Primary Sector	Secondary Sector	Tertiary Sector
EPIRUS	9,4	21,7	68,9
CENTRAL MACEDONIA	9,3	20,5	70,2
WESTERN GREECE	9,3	16,6	74,1
THESSALY	8,4	18,6	73,0

PELOPONNESE	8,3	23,4	68,3
CRETE	7,6	14,4	78,0
NORTH AEGEAN	4,3	10,6	85,1
WESTERN MACEDONIA	6,75	22,5	70,2
EASTERN MACEDONIA AND THRACE	6,22	19,9	73,9
CENTRAL GREECE	4,9	8,8	86,4
IONIAN ISLANDS	2,8	9,6	87,6
SOUTH AEGEAN	2,2	9,7	88,1
ATTIKI	0,4	12,6	87,0

Source: Eurostat

The next Table (Table 9) imprints Epirus' total employed population in the Primary Sector of activities.

Table 9. Number of Employed Population in the Agricultural Sector per Region

	2008	2009	2010
CENTRAL MACEDONIA	91.017	92.151	95.986
THESSALY	60.272	60.965	70.834
PELOPONNESE	77.207	77.892	70.178
WESTERN GREECE	56.231	61.431	63.198
EASTERN MACEDONIA AND THRACE	57.072	60.353	58.810
CRETE	41.297	44.686	51.235
CENTRAL GREECE	41.932	40.858	45.595
EPIRUS	25.156	27.102	27.859
WESTERN MACEDONIA	18.514	20.896	19.486
ATTIKI	15.297	15.996	17.467
IONIAN ISLANDS	15.467	16.571	14.657
NORTH AEGEAN	9.495	9.222	10.211
SOUTH AEGEAN	7.877	8.437	9.597

Source: Eurostat

A very important element is the age composition of the population occupied in the Agricultural Sector in the Region of Epirus. The biggest part of this population, namely 15.206 people is between 45-64 years old.

Table 10. Age Composition of the population occupied in the Agricultural Sector in Epirus

	15-44	45-64	65-75
Epirus	31,3% 8.728	54,6% 15.206	14,1% 3.925

A3. The Olive Sector in Epirus

The olive cultivation holds a very important position in the agricultural activity in the Region of Epirus especially in the Regional Unities of Arta, Preveza and Thesprotia.

Varieties

In the plain of Arta the olive cultivation is mainly focused on table olives, namely Konservolia (or Amfissis or Chondrolia) and Kalamon - in a smaller percentage of cultivation - which at the moment is expanding in lowland areas. In the plains of Preveza and Thesprotia the cultivation is focused on oil-extracted varieties, especially Lianolia of Corfu (or Ladolia).

It is worth mentioning that the variety Konservolia Artas and the Extra Virgin Olive Oil of Preveza have been registered as products of Protected Geographical Indication (PGI).

The Olive Capital

The data available present a high level of discrepancy depending the source and reference time. In any case we will present some elementary data that shows what we know from experience: Epirus has a very small part of the total olive cultivation of the country, which on the other hand is crucial for the local economy.

Table 11. Olive Groves: Number of Acres and Trees per Region (2011)*

	Acres	Olive Trees
PELOPONNESE	2.122.043	35.845.053
CRETE	1.676.752	171.587.820
WESTERN GREECE	1.013.167	15.523.983
CENTRAL GREECE	848.361	11.110.173
NORTH AEGEAN	692.534	11.960.966
IONIAN ISLANDS	421.236	5.197.728
CENTRAL MACEDONIA	363.334	7.693.440
THESSALY	351.029	6.142.674
ATTIKI	238.375	1.248.204
EPIRUS	231.950	2.496.629
SOUTH AEGEAN	195.379	1.976.884
EASTERN MACEDONIA AND THRACE	146.439	2.382.514
WESTERN MACEDONIA	1.721	78.960
GREECE	**7.982.306**	**155.811.597**

Source: ELSTAT – Ministry of Agricultural Development 2011

*For simplification reasons the greek measurement unit "stremma" is assigned to "acre". The official equivalence is: 1 acre ≈ 4.047 stremmata

According to another study, carried out by ELSTAT as well, the total number of olive trees in Greece is **156.800.984** presenting a slight difference from the above mentioned data. A very interesting point is the allocation between the table and the oil-extraction varieties as w as the change of this allocation from 1961.

Table 12. Number of olive trees in Greece (1961-2010) and allocation according to their use (table olives – oil-extracted olives)

	Oil-Extracted Varieties	Table Olives	Total
1961	75.054.357	10.630.613	85.684.970
1971	86.679.600	13.294.000	99.973.600
1981	99.051.452	22.103.155	121.156.607
1991	104.950.000	24.178.338	129.128.338
2001	135.951.606	24.715.116	160.666.722
2010	136.862.936	20.938.048	157.800.984

Source: ELSTAT – Ministry of Agricultural Development 2011

At this point it is useful to make some comments: a) there is a remarkable reduce of table olives in 2010 which is not easily explicable, b) the oil-extracted varieties hold 86,7% of the total (2010 figures), c) there is a total increase of the olive trees of 84,2% (72.116.014 trees).

Table 13. Allocation of the olive cultivation areas of Epirus per variety

	Olives for Olive Oil		Table Olives		Producers
Epirus (Total)	80,6%	186.992	19,4%	44.958	3.983
Arta	38,6%	21.266	61,4%	33.797	–
Ioannina	75,3%	1.441	24,7%	474	3.583
Thesprotia	98,7%	84.850	1,3%	1.088	4.972
Preveza	89,2%	79.435	10,8%	9.599	12.538
Greece					448.834

Source: ELSTAT – 2011

Oil Mills

The number of oil mills in Epirus corresponds to this of the whole country.

Table 14. Number of oil milles per Region

CRETE	533
PELOPONNESE	465
WESTERN GREECE	301
IONIAN ISLANDS	176
CENTRAL GREECE	167
NORTH AEGEAN	119
CENTRAL MACEDONIA	64
THESSALY	63
SOUTH AEGEAN	59
EPIRUS	56
ATTIKI	44

EAST MACEDONIA AND THRACE	26
WESTERN MACEDONIA	0
GREECE	**2.073**

Source: ELSTAT – 2010

In general, we must highlight that the number of oil mills in Greece is considered as extremely high and this is an important element that increases the cost of the produced olive oil. The evident geographical difficulties of the country (isolated areas, islands etc) are not a sufficient explanation of this phenomenon. It seems that the reason lies mainly in historical and socioeconomic aspects as well as the management of the Community subsidies.

Table 15. Oil Mills per Epirus Regional Unities

EPIRUS	56
THESPROTIA	25
PREVEZA	24
ARTA	7
IOANNINA	-

Source: ELSTAT – 2010

Part B: The Greek Olive Oil

Olive oil constitutes a huge cultural, nutritional, economic, social and environmental value for Greece. This richness, though, remains unexploited, as it is clearly demonstrated in the following basic indicators:

Table 16. Evolution of the nominal and deflated producer prices of olive oil (1961-2010, prices in Euros/kgr)

YEAR	Nominal Price	Deflated Price		YEAR	Nominal Price	Deflated Price
1961	0,044	3,651		1986	0,873	5,063
1962	0,056	4,702		1987	0,924	4,600
1963	0,056	4,593		1988	0,989	4,338
1964	0,057	4,623		1989	1,194	4,608
1965	0,059	4,623		1990	1,654	5,299
1966	0,061	4,581		10 year average		4,834
1967	0,063	4,611		1991	2,498	6,702
1968	0,072	5,303		1992	1,690	3,912
1969	0,074	5,303		1993	1,742	3,525
1970	0,084	5,810		1994	1,957	3,570
10 year average		4,780		1995	2,332	3,907

1971	0,079	5,334		1996	3,179	4,923
1972	0,087	5,625		1997	2,465	3,616
1973	0,110	6,168		1998	1,979	2,771
1974	0,140	6,185		1999	2,081	2,840
1975	0,160	6,231		2000	1,850	2,447
1976	0,164	5,633		10 year average		3,821
1977	0,182	5,548		2001	1,890	2,418
1978	0,216	5,853		2002	2,170	2,679
1979	0,240	5,484		2003	2,190	2,612
1980	0,287	5,241		2004	2,570	2,979
10 year average		5,730		2005	2,830	3,168
1981	0,329	4,828		2006	3,190	3,460
1982	0,384	4,649		2007	2,650	2,793
1983	0,485	4,892		2008	2,470	2,500
1984	0,597	5,079		2009	2,070	2,070
1985	0,699	4,983		2010	2,320	2,216
				10 year average		2,689

Source: ELSTAT, researchers' data processing / 1 Euro: 340,75 drachmas

Graph 1. Evolution of the deflated producer prices of olive oil (1961-2010, prices in Euros/kgr)

Source: Table 16

We can observe an increasing trend of the prices from 1961 to 1975 (of around 70,7 %) ar
a continuous decrease (of around 64,4%) the following years which is interrupted in

specific years due to the reduced production either in Greece or/and the other main olive producing countries (Spain, Italy). This decrease of the last 40 years is much more frustrating if we consider:

a) The amelioration of the quality achieved all these years,
b) The increase of the production cost, hence the even bigger reduce of the net income
c) The support of the European Union through specific programs and subsidies
d) Even these golden years (2005/2006, 2012/2013) were lost in occasional και mid-term increase of exports in bulk to the competitive countries Italy and Spain and weren't exploited for the increase of the share of the standardized olive oil in international markets.

Apart from the fall of the Greek olive oil prices another important point is the comparison with the corresponding prices in Italy and Spain.
The Greek prices are always significantly lower of the Italian ones. Additionally, the comparison with the Spanish olive oil prices shows that the time when the Greek prices were steadily higher belongs to the far past. On the contrary, year by year the Spanish prices are almost equal to the Greek ones, even though the Spanish olive oil has a lower production cost and are of a lower quality.

Table 17. Monthly producer prices in Euros/kg for the olive oil extra 0,8

COUNTRIES	Nov 09	Dec 09	Jan 10	Feb 10	Mar 10	Apr 10	May 10	Jun 10
Greece	2,19	2,05	2,15	2,25	2,14	2,23	2,18	2,18
Italy	2,62	2,43	2,56	2,57	2,61	2,40	2,40	2,59
Spain	2,15	2,05	2,12	2,16	2,17	2,15	2,14	2,02
COUNTRIES	Jul 10	Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Jan 11	Feb 11
Greece	2,22	2,27	2,23	2,15	2,00	2,10	2,09	2,05
Italy	2,58	2,56	2,40	2,40	2,43	2,60	2,65	2,70
Spain	2,00	2,01	2,01	1,98	1,93	2,04	2,01	2,01
COUNTRIES	Mar 11	Apr 11	May 11	Jun 11	Jul 11	Aug 11	Sep 11	Oct 11
Greece	2,06	2,06	2,24	2,11	2,32	2,41	2,33	2,24
Italy	2,73	3,10	3,05	3,00	3,05	2,90	2,90	2,58
Spain	2,01	2,04	2,07	2,04	2,04	1,98	1,95	1,95
COUNTRIES	Nov 11	Dec 11	Jan 12	Feb 12	Mar 12	Apr 12	May 12	Jun 12
Greece	1,97	1,82	1,83	1,88	1,83	1,99	2,00	2,02
Italy	2,40	2,15	2,15	2,15	2,00	2,35	2,45	2,45
Spain	1,98	1,94	1,89	1,83	1,83	1,83	1,83	1,80
COUNTRIES	Sep 12	Oct 12	Nov 12	Dec 12	Jan 13	Feb 13	Mar 13*	Apr 13

Greece	2,38	2,46	2,35	2,38	2,75	2,77	2,46	2,46
Italy	3,03	3,03	2,92	2,93	3,21	3,23	3,20	3,22
Spain	2,61	2,64	2,50	2,47	2,89	2,97	2,94	2,86
COUNTRIES	May 13	Jun 13	Jul 13	Aug 13	Sep 13	Oct 13	Nov 13	Dec 13
Greece	2,42	2,39	2,43	2,46	2,47	2,42	2,40	2,42
Italy	3,17	3,13	3,12	-	3,01	2,88	2,67	2,65
Spain	2,72	2,74	2,71	2,63	2,58	2,39	2,34	2 ,145
COUNTRIES	Jan 14	Feb 14						
Greece	2,46	2,49						
Italy	2,91	3,09						
Spain	2,09	2,11						

Source: "Olive and Olive Oil magazine" ISMEA, POOLRED, *IOC (after March 2013)

Note: These trading periods are characterized by the intense fluctuation due to the abrupt alternations of the Spanish production which in 2011/2012 recorded a historic high of 1,6 million tons, in 2012/2013 dwindled to 600 thousand tons. In 2013/2014 a new history high of 1,7 million tons is expected.

Graph 2. Monthly producer prices in Euros/kg for the olive oil extra 0,8 (Greece, Italy, Spain)

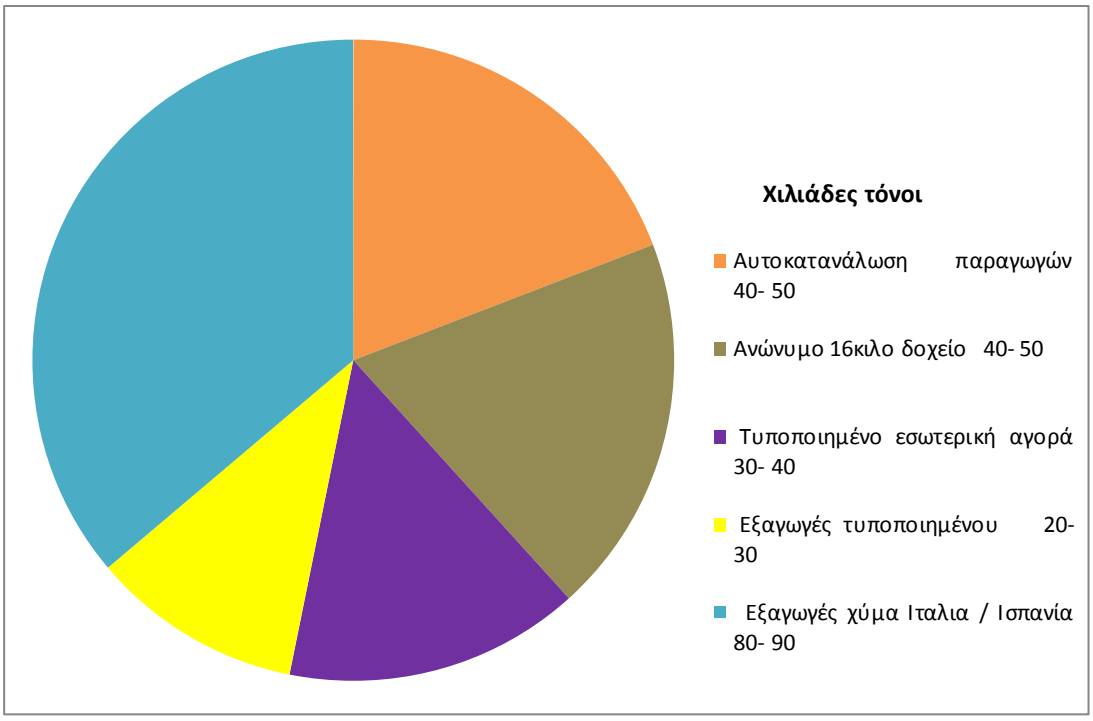
Source: Table 17

Olive oil for Greece is a surplused product. According to the estimations of the olive oil market experts (private and cooperative enterprises), the real balance is as follows:

Table 18. Average of the Greek Olive Oil Balance (in ktons)

*Supply = Production [235] + Imports [0]	=	235
*Demand = Producers' self-consumption	[40 - 50]	+
No-name 16kg Containers	[40 - 50]	+
Standardized Internal Market	[30 - 40]	+
Branded Exports	[20 - 30]	+
Exports Bulk	[80 - 90]	=
	[210-260]	= average 235 ktons

Graph 3. Greek Olive Oil Balance (in ktons)



Source: Table 18

In this point we have to bear in mind that in certain years with a remarkably increased production, like 2012/2013, the production in Greece reached 320-330 ktons, while this year (2013/2014) the production will not be over 110-120 ktons. Such fluctuations are present in all olive oil countries as Spain, for example. It is worth mentioning that according to estimations of the market's experts, the size of the Italian production is at the same level with the Greek one. These two countries "compete" for the second position (or the third in case of the over production of Tunisia) of the world ranking, far from Spain that holds th first position.

Table 18 shows that Greece is surplused. For this reason the most important factor is the exports. So, let's see the main exporting destinations.

Table 19. Greek Exporting for Olive Oil and Seed - Oil to selected countries (2001-2013 Average, in tons, prices in Euros/kg)

Extra Virgin Olive Oil (15.09.10)	2001-2004		2005-2008		2009-2013	
COUNTRIES	QUANTITIES	PRICES (Euros)	QUANTITIES	PRICES (Euros)	QUANTITIES	PRICES (Euros)
ITALY	67.897	2,34	70.108	3,08	73.985	2,35
SPAIN	1.840	2,27	3.797	3,06	4.523	1,52
U.S.A	2.782	3,28	3.226	4,09	3.713	3,52
GERMANY	1.897	3,46	2.313	4,19	5.742	3,71
UNITED KINGDOM	1.725	4,52	1.557	3,65	1.059	3,22
CANADA	1.307	3,21	2.495	3,61	2.397	3,47
TOTAL BULK	69.737	2,27	72.955	3,13	77.604	2,38
STANDARDIZED	13.050	3,46	17.801	3,99	25.346	3,69
TOTAL	82.786	2,45	90.756	3,30	102.950	2,70
RAFINE OLIVE OIL (15.09.90)	2001-2004		2005-2008		2009-2013	
COUNTRIES	QUANTITIES	PRICES (Euros)	QUANTITIES	PRICES (Euros)	QUANTITIES	PRICES (Euros)
ITALY	452	1,91	2.194	2,75	5.330	1,99
SPAIN	15	2,12	809	1,91	1.032	1,05
AUSTRALIA	267	2,74	200	3,81	63	3,38
U.S.A.	104	2,87	65	4,08	45	3,31
TOTAL BULK	456	1,85	3.245	2,16	6.362	1,42
STANDARDIZED	1.613	2,74	3.568	2,94	2.499	2,77
TOTAL	1.810	2,91	6.368	2,75	8.862	1,86
SEED-OIL (15.10)	2001-2004		2005-2008		2009-2013	
COUNTRIES	QUANTITIES	PRICES (Euros)	QUANTITIES	PRICES (Euros)	QUANTITIES	PRICES (Euros)
ITALY	7.546	0,93	14.749	0,93	14.183	0,95
SPAIN	7.464	0,62	5.578	1,35	5.643	0,89
U.S.A	596	1,34	455	2,12	373	1,96
TOTAL BULK	15.010	0,70	20.327	1,19	22.292	0,85
STANDARDIZED	2.929	1,44	6.300	1,69	4.816	1,67
TOTAL	17.939	0,82	26.627	1,31	24.643	1,09

Source: Export Promotion Organization (EPO) from ELSTAT, Researcher's Data Processing

Some clarifications on the above table:

a) Exporting to Italy and Spain is almost totally in bulk, no-name olive oil and seed-oil. Their sum is presented in line "Total Bulk"
b) For all the other countries we assume that exports are standardized. Their sum is presented in line "Standardized"
c) For the category of the branded / standardized we have chosen in every one of the three quality categories some countries of destination that have a stable presence (in terms of quantities) the period 2001-2013.

Table 20. Comparison of the Greek Olive Oil and Seed - Oil Exports to selected countries for the periods 2001-2004 and 2008-2013 (quantities in tons, prices in Euros/kg)

VIRGIN OLIVE OIL	Price Variation		Quantity Variation	
COUNTRIES	Euros/kg	%	Tons	%
ITALY	0,01	0,3	6.088,17	9,0
SPAIN	-0,75	-33,0	2.683,44	145,9
USA	0,24	7,3	931,00	33,5
GERMANY	0,25	7,3	3.845,17	202,7
UNITED KINGDOM	-1,30	-28,7	-666,15	-38,6
CANADA	0,26	8,1	1.090,98	83,5
TOTAL BULK	0,11	4,9	7.867,02	11,3
STANDARIDZED	0,23	6,6	12.296,33	94,2
GRAND TOTAL	0,24	10,0	20.163,35	24,4
ΡΑΦΙΝΕ-ΚΟΥΠΕ	Price Variation		Quantity Variation	
COUNTRIES	Euros/kg	%	Tons	%
ITALY	0,08	4,2	4.878,00	1079,2
SPAIN	-1,07	-50,7	1.017,14	6780,9
AUSTRALIA	0,64	23,4	-203,70	-76,4
USA	0,45	15,5	-58,93	-56,9
TOTAL BULK	-0,42	-23,0	5.906,39	1296,0
STANDARIDZED	0,03	1,0	886,21	54,9
GRAND TOTAL	-1,05	-36,2	7.051,35	389,5
SEED OIL	Price Variation		Quantity Variation	
COUNTRIES	Euros/kg	%	Tons	%
ITALY	0,03	2,9	6637,65	88,0
SPAIN	0,27	44,2	-1820,85	-24,4
USA	0,62	46,7	-223,26	-37,5
TOTAL BULK	0,14	20,3	7281,64	48,5
STANDARIDZED	0,23	16,1	1887,25	64,4
GRAND TOTAL	0,27	32,6	6704,05	37,4

To complete the overview of the Greek exports we present the three (3) larger importing/consuming countries, namely USA, China and Russia.

Table 21. 2007-2012 Comparison of Olive Oil imports in USA, China and Russia per country of origin (quantities in tons, prices in Euros/kg)
Table 21a – USA Market

From 2007 till 2012 USA imports have increased from 253.509 tons to 306.790 tons (+21%). This increase is in favor of:

	2007	2012	Change 2012/2007		Average selling price (Euros/kg)
			Quantity in tons	%	
Italy	147.851	154.961	+7.110	+4,8	2,61
Spain	46.272	81.553	+35.281	+76,2	2,11
Greece	5.684	4.807	-877	-15,4	2,99
Tunisia	20.433	39.630	+19.197	+94,0	1,99
Turkey	13.429	4.432	-8.997	-67,0	2,31
Argentina	9.220	5.376	-3.844	-41,7	2,06
Marocco	2.450	5.438	+2.988	+122,0	2,10

The highest price is achieved by France reaching 6,14 Euros/kg for a quantity of 70 tons only.

Table 21b – Chinas' Market

From 2007 till 2012 Chinas' imports increased from 7.163 tons to 41.332 tons (+477%). This increase is in favor of:

	2007	2012	Change 2012/2007		Average selling price (Euros/kg)
			Quantity in tons	%	
Italy	2.165	8.165	6.000	277,1	2,97
Spain	3.325	25.796	22.471	675,8	2,89
Greece	889	2.756	1.867	210,0	3,50
Tunisia	39	1.396	1.357	3.479,5	2,36
Turkey	279	899	620	222,2	2,87

Table 21c – Russia's' Market

From 2007 till 2012 Russia's imports increase from 17.182 tons to 25.204 tons (+46,7%). This increase is in favor of:

	2007	2012	Change 2012/2007		Average selling price (Euros/kg)
			Quantity in tons	%	
Italy	3.483	5.513	+2.030	58,3	2,91
Spain	11.315	15.921	+4.606	40,7	2,53
Greece	725	2.052	+1.327	183,0	3,32

From the Tables presented above (19, 20, 21) we can draw some useful conclusions:

a) Greek exports – hence the whole olive oil sector – are sent in bulk mainly to Italy and secondly to Spain. Trading in bulk represents 70-75% of the olive oil exports and 90% of seed-oil

b) This is a proof of the Greek olive oil "pathogeny" and this leads to numerous negative results like the loss of approximately 1,30 Euros/kg in olive oil's selling price and 50% of seed-oil's selling price. The more realistic approach is that "Thank God the Italians/Spanish buy our olive oil, even in bulk, because otherwise we could not sell it" (Vacontios, 2001). One of the main reasons for the decrease of the Greek producer prices is the gradual retirement of the Italian buyers

c) Exports of the extra virgin olive oil reach 80-100 ktons, while these of seed-oil reach 18-25 ktons. Exports of the refined olive oil are very low, since the quantities of ραφινέ produced are very limited

d) There is a remarkable increase of exports to Germany in relatively high prices

e) Finally, from tables 21 a, b and c, it is evident that the market share of Greek olive oil is inconsiderable. It represents one figure shares in major markets, not being able to exploit the consumption increase and the imports of these markets respectively. The most typical example is that of the USA, the larger importer of olive oil with over of 300.000 tons. Even though the Greek homogeny is very strong and the official recognition of its high quality, Greek olive oil holds a market share of only 1,5-2,5% holding the 5th or 6th position in the relevant ranking.

Part C: The Greek Table Olive

First of all we would like to clarify that the only common element of olive oil and table olive is that they come from the same mother tree. Essentially, we are talking for two different products, even if table olive has some common trading features with olive oil. It is a product of a high quality, with a production surplus since domestic demand is lower than the total production. According to an estimated approach 67% of the Greek production is exported while the remaining 33% is domestically consumed - 50% in self-consumption, 40% bulk and only 10% in small packaging (Georgoudis, 2001).

Table 22 – Greek Table Olives Balance (in ktons)

GREECE	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
PRODUCTION	108	95	105	107	135	130	160	94
CONSUMPTION	26	24	20	20	16	15	18	15
EXPORTS***	39	30	53	49	53	57,5	67	52
IMPORTS***	0	3	2	2	2	4	4	8

*2013/2014: Estimation
**2013/2014: Prediction
***Trading with third countries, outside EU
Source: International Olive Committee, Researchers Data Processing

Table 22 shows that table olive is surplused but the following Tables 23a and 23b, imprinting the Greek olive sector exporting activity, show a relatively better image comparing to olive oil.

Table 23a – Greek Table Olives Balance Exporting in selected countries (Quantities in tons, prices in Euros/kg)

TABLE OLIVES	2001-2004		2005-2008		2009-2013	
COUNTRIES	QUANTITIES	PRICES	QUANTITIES	PRICES	QUANTITIES	PRICES
ITALY	8.385	1,79	14.522	1,56	11.036	1,75
AUSTRALIA	4.752	2,31	5.518	2,59	9.748	2,70
USA	13.282	2,78	16.774	2,77	23.321	2,69
GERMANY	8.520	2,35	10.170	2,56	16.055	2,54
UNITED KINGDOM	2.618	2,39	3.773	2,80	5.870	2,76
CANADA	3.181	2,35	5.057	2,14	4.751	2,45
BULGARIA	3.404	1,41	4.300		6.382	1,31
TOTAL	48.405	1,83	56.985	2,25	74.038	2,27

Table 23b – Changes in Greek Table Olives Exports in selected countries (Quantities in tons, prices in Euros/kg)

TABLE OLIVE	Difference between 2001-04 and 2009-13			
COUNTRIES	Prices	%	Quantities	%
ITALY	-0,04	-2	2.650	32
AUSTRALIA	0,40	17	4.995	105
USA	-0,10	-3	10.039	76
GERMANY	0,19	8	7.534	88
UNITED KINGDOM	0,36	15	3.252	124
CANADA	0,10	4	1.570	49
BULGARIA	-0,10	-7	2.977	87
TOTAL	0,44	24	25.633	53

Πηγή: Export Promotion Organization (EPO) from ELSTAT, Researcher's Data Processing

The table olive market:

a) Is more balanced, b) has better exporting performance, c) in many cases, prices are relatively satisfying for the producers, d) someone can be more optimistic for the future perspectives.

These differences can be attributed in specific reasons which, though, have to be investigated more thoroughly since the existing studies are not sufficient:

a) The table olive producers seem to be more professionals with larger holding and higher cultivation expenditures

b) The product (table olive) is consumed as it is, so the consumer can easily esteem its quality. Olive oil has substantially one quality category, the extra virgin olive oil. On the contrary, table olive has several different categories (Kalamon, Chalkidikis, Konservolies, Green and Black throumpes etc in Greece, hojiblanca, manzanilla, gordal in Spain etc) as well as several ways of processing (with vinegar, crashed, filled etc). This categorization leaves many choices to the producer / manufacturers as well as the consumer

c) Point (b) does not leave any room for adulteration while limits consumers' deception with products of a lower quality

d) Oil milles do not exist in the agro-food chain

e) The products' supply does not have the characteristics of oligopoly presented in olive oil resulting to a big number of small – medium manufacturers

f) Italy does not have the main role in the Greek market like in olive oil. Spain is the largest producer in the world but due to the diversity described in point (b) great περιθώρια of invasion in international markets exist with a differentiated product, while the internal market is more protected excluding the illegal "greekization" of imported olives.

g) Finally, of a great importance is the fact that table olive did not receive the huge amount of the Community subsidies that olive oil did. This fact may have limited the products' funding but in the meantime protected it from the distortions caused from the over subsidies.

Really interesting is the timeless price evolution (nominal and deflated)

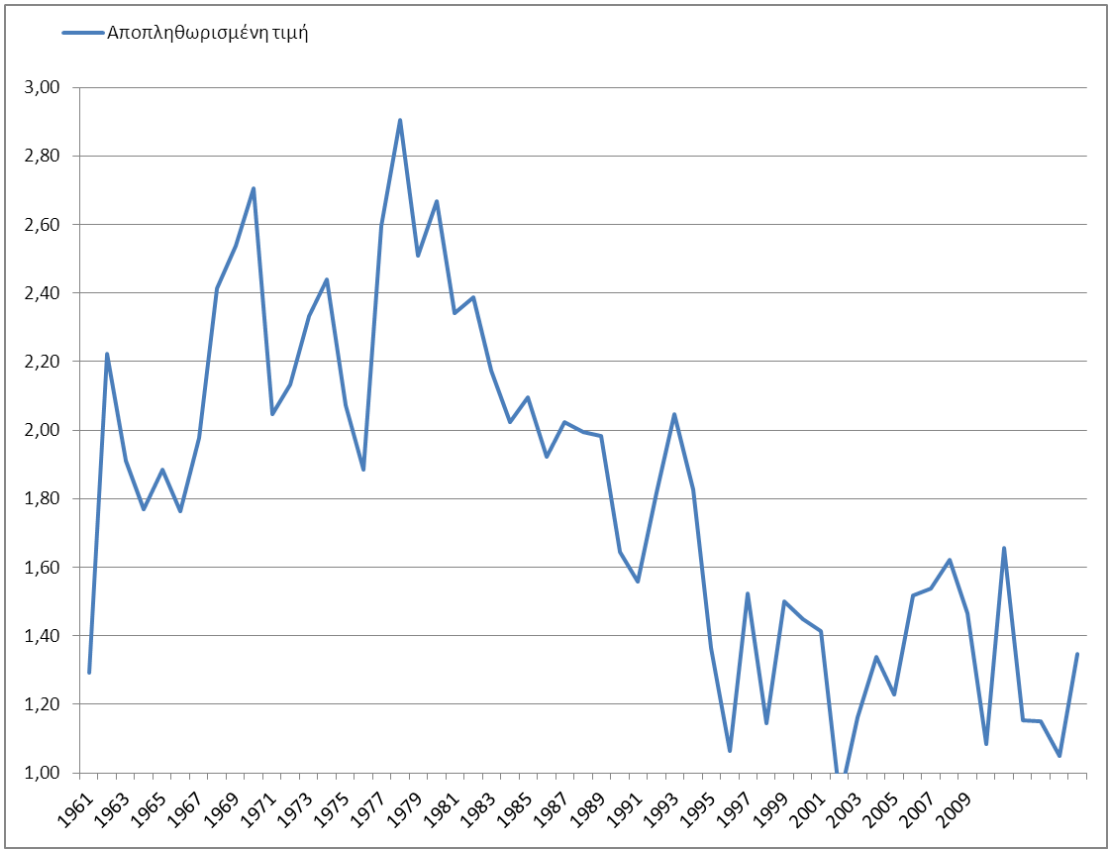
Table 24 – Evolution of the nominal and deflated producer prices of table olive (1961-2010, prices in Euros/kgr)

Year	Name Price	Deflated Price	Year	Name Price	Deflated Price
1961	0,02	1,29	1986	0,34	1,99
1962	0,03	2,22	1987	0,40	1,98
1963	0,02	1,91	1988	0,37	1,64
1964	0,02	1,77	1989	0,40	1,56
1965	0,02	1,88	1990	0,57	1,82
1966	0,02	1,76	10 year average	0,21	2,05
1967	0,03	1,98	1991	0,68	1,83
1968	0,03	2,41	1992	0,59	1,36
1969	0,04	2,54	1993	0,53	1,06
1970	0,04	2,70	1994	0,83	1,52
10 year average	0,03	2,05	1995	0,68	1,14
1971	0,03	2,13	1996	0,97	1,50
1972	0,04	2,33	1997	0,99	1,45
1973	0,04	2,44	1998	1,01	1,41
1974	0,05	2,07	1999	0,68	0,93
1975	0,05	1,89	2000	0,88	1,16
1976	0,08	2,60	10 year average	0,78	1,34
1977	0,10	2,90	2001	0,96	1,23
1978	0,09	2,51	2002	1,23	1,5

1979	0,12	2,67	2003	1,29	1,54
1980	0,13	2,34	2004	1,40	1,62
10 year average	0,07	2,39	2005	1,31	1,47
1981	0,15	2,17	2006	1,00	1,08
1982	0,17	2,02	2007	1,57	1,65
1983	0,21	2,10	2008	1,14	1,15
1984	0,23	1,92	2009	1,15	1,15
1985	0,28	2,02	2010	1,10	1,05
			10 year average	1,22	1,35

1 Euro: 340,75 drachmas. Deflated prices in year 2009.
Source: Greek Statistics Services και Researchers' data processing

Graph 4. Evolution of table olive producer's deflated prices in Greece (1961-2010, in Euros/kg)



Source: Table 24

Since 1961, prices follow an increasing trend that reaches its peak in 1977 and from ther they follow a decreasing trend with intense short-term fluctuations.

Part D: The Basic Characteristics of the Global Olive Production

As we have already mentioned earlier in this study, the statistical data available have some problems. In EU countries (mainly Italy and Greece) the quantities produced (hence the quantities of consumed) seem to follow the quantities declared for subsidies rather than these of the real market. According to the Executive Manager of the International Olive Committee «The evolution of the prices does not correspond to the balance "production-consumption" and this a real mystery. For example in 2005/2006 there was a significant price increase but at the same time the equilibrium was balanced (Jean-Louis Barjol,2011).

D1. The global olive oil market

As it is well known olive oil production is concentrated around the Mediterranean Sea, even though the last years it has started to grow in the so-called "new countries" (USA/California, Australia, South Africa, Argentina, Chile etc) with limited areas and quantity but with very dynamic cultivations.

Table 25 – Areas with olive groves (in hectares, 1 hectare=1000 m^2)

Production Country	2007	Estimation 2011	Annual Growth %	Growth ha/year
European Union	5.462.000	5.710.000	4,54	41.000
Other than E.U.	76.000	81.000	6,58	800
Africa	2.949.000	3.211.000	8,88	44.000
Middle East	1.817.000	1.983.000	9,14	28.000
USA	153.000	181.000	18,3	5.000
Asia, Oceania	30.000	32.000	6,67	300
Other Countries	9.000	na	na	na
Total	10.495.000	11.207.000	6,78	119.000

Source: International Olive Committee

In the following tables, the production, consumption, exports and imports of the countries that play the most important role in the global market are presented. In order to counteract the "alternate bearing" phenomenon, data is gathered in four year averages.

Table 26 – Average of the global olive oil equilibrium (1990-2014, quantities in ktons)

OLIVE OIL PRODUCTION	AVERAGE 1990-1994	AVERAGE 1994-1998	AVERAGE 1998-2002	AVERAGE 2002-2006	AVERAGE 2006-2010	AVERAGE 2010-2014	DIFFERENCE 2010-14 TO 1990-94
							IN QUANTITIES
GREECE	280	379	420	395	331	296	16
SPAIN	602	725	962	1023	1195	1290	688

ITALY	448	515	576	709	493	426	-22	-4,9
PORTUGAL	34	41	36	33	50	69	35	101,6
TOTAL E.U.	1366	1661	1997	2169	2078	2093	727	53,2
MOROCCO	41	65	50	68	96	118	77	186,6
TUNISIA	195	131	148	176	160	151	-45	-22,8
TURKEY	61	110	120	119	129	182	121	197,5
SYRIA	69	90	113	138	134	178	109	157,6
TOTAL OF THE 4 MEDITERRANEAN COUNTRIES	366	396	431	500	518	627	261	71,4
NEW COUNTRIES								
ARGENTINA	9	9	8	16	21	25	16	182,9
CHILE					8	24	24	
AUSTRALIA			1	5	14	15	15	
USA	2	1	1	1	2	7	5	300,0
TOTAL NEW COUNTRIES	11	10	9	22	44	71	61	578,6
GLOBAL PRODUCTION	1824	2148	2542	2814	2781	2980	1156	63,4
OLIVE OIL CONSUMPTION	AVERAGE 1990-1994	AVERAGE 1994-1998	AVERAGE 1998-2002	AVERAGE 2002-2006	AVERAGE 2006-2010	AVERAGE 2010-2014	DIFFERENCE 2010-14 TO 1990-94	
							IN QUANTITIES	%
GREECE	200	230	263	272	248	203	3	1,6
SPAIN	414	448	561	575	540	555	142	34,2
ITALY	626	675	721	811	705	615	-11	-1,7
PORTUGAL	45	62	64	70	82	77	32	70,3
FRANCE	38	56	87	97	108	105	68	180,5
NON PRODUCER COUNTRIES	29	56	97	154	186	220	191	655,7
GERMANY	11	18	34	43	49	60	49	445,4
EUROPEAN UNION	1352	1528	1792	1978	1868	1776	425	31,4
MOROCCO	43	43	54	56	73	121	78	181,6
TUNISIA	58	51	49	42	37	35	-23	-39,3
TURKEY	52	70	68	52	96	148	96	182,8
SYRIA	66	84	94	123	105	124	58	88,1
TOTAL OF THE 4 MEDITERRANEAN COUNTRIES	219	248	264	272	310	428	209	95,5
AUSTRALIA	15	19	27	33	41	40	25	173,5
BRAZIL	14	24	24	24	42	69	55	392,0
CANADA	11	16	23	28	32	39	27	243,3
CHINA					15	37	37	
JAPAN	5	21	37	31	33	45	40	
USA	97	122	176	210	252	291	194	
RUSSIA	6	2	3	8	16	25	19	

TOTAL	148	205	289	335	430	545	397	268,9
GLOBAL CONSUMPTION	1853	2118	2513	2794	2822	3061	1208	65,2
OLIVE OIL EXPORTS	AVERAGE 1990-1994	AVERAGE 1994-1998	AVERAGE 1998-2002	AVERAGE 2002-2006	AVERAGE 2006-2010	AVERAGE 2010-2014	DIFFERENCE 2010-14 TO 1990-94	
							IN QUANTITIES	%
GREECE	10	7	8	11	11	13	4	37,1
SPAIN	59	61	88	108	152	212	153	260,6
ITALY	88	112	166	183	185	229	141	160,1
PORTUGAL	8	15	16	16	30	52	44	575,4
EUROPEAN UNION	166	199	281	320	382	512	346	208,3
MOROCCO	2	15	4	19	8	16	14	807,1
TUNISIA	137	91	101	116	136	118	-18	-13,5
TURKEY	9	37	56	72	30	28	19	220,0
SYRIA	0	6	6	32	23	25	25	
TOTAL OF THE 4 MEDITERRANEAN COUNTRIES	147	149	166	239	197	187	40	26,9
GLOBAL EXPORTS	329	368	462	594	622	755	425	129,2
OLIVE OIL IMPORTS	AVERAGE 1990-1994	AVERAGE 1994-1998	AVERAGE 1998-2002	AVERAGE 2002-2006	AVERAGE 2006-2010	AVERAGE 2010-2014	DIFFERENCE 2010-14 TO 1990-94	
							IN QUANTITIES	%
SPAIN	31	37	28	39	33	24	-8	-24,5
FRANCE	10	1	0	1	4	7	-3	-32,7
ITALY	86	87	98	134	100	73	-13	-15,1
EUROPEAN UNION	129	129	128	175	140	107	-22	-17,1
AUSTRALIA	15	19	26	30	33	31	16	106,8
CANADA	11	16	23	28	32	39	27	243,3
USA	99	128	181	218	252	288	189	190,1
BRAZIL	14	24	24	24	42	69	55	392,0
CHINA					15	37	37	
JAPAN	5	21	29	31	33	45	40	802,5
SWITZERLAND	3	5	8	11	11	14	11	354,2
TOTAL	161	236	315	366	459	591	430	266,2
GLOBAL IMPORTS	339	396	496	607	648	770	431	126,9

Source: International Olive Committee (IOC) and Researchers' Data Processing
Note: The data presented above regarding exports and imports do not include the intra-community trade. It contains all the transactions between European Union and third countries.

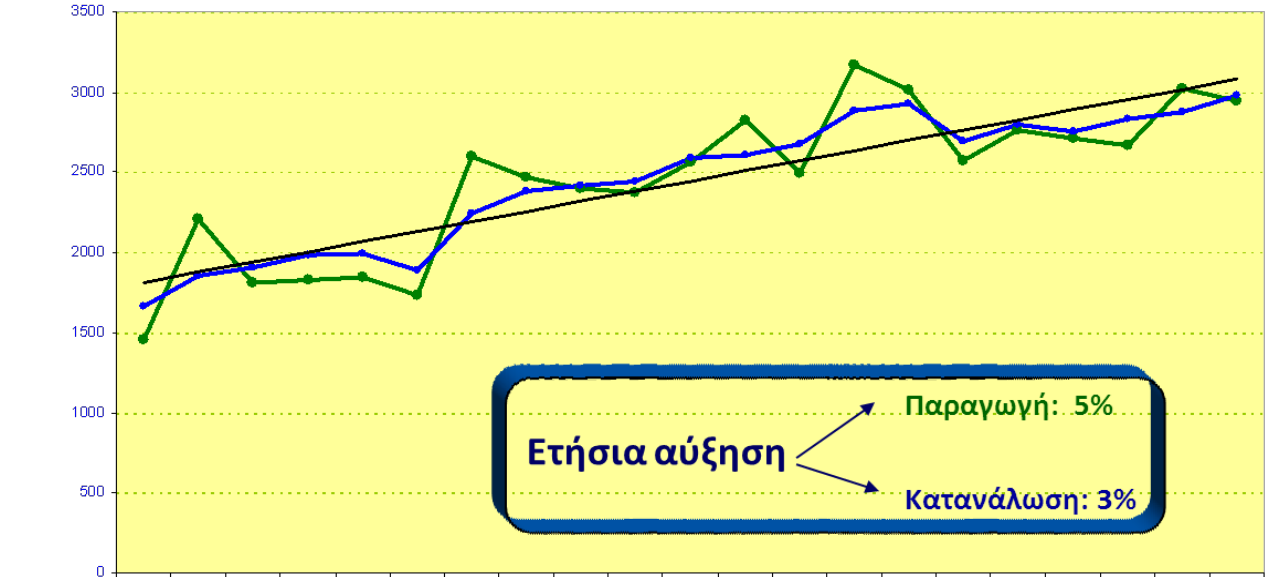
The most important change is the frenzied increase mainly of the Spanish production. A proportional percentage increase is observed in the consumption of the non-produ countries (like USA). This increase is based on the documentation and dissemination

Mediterranean diet's beneficial effects, especially of the consumption of extra virgin olive oil.

So, the major question is if in the coming years the current relevant balance will be maintained or it will be reversed due to the oversupply and the creation of stocks that cannot be absorbed by the global market. This would be catastrophic because it would lead to a much bigger compression/reduction of prices that the traditional cultivation model (in Greece and Italy) cannot handle.

In the following diagram the Executive Manager of the IOC, Jean-Louis Barjol shows in a very emphatic way how vulnerable is the current balance when the world production increases annually by over 5% while the consumption only by 3%.

Graph 5. Global olive oil production and consumption trend



	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9	2009/10 (prov.)	2010/11 (est.)
Production	1463	2206	1812	1825	1846	1736	2595	2466	2403	2375	2566	2826	2496	3174	3013	2573	2767	2713	2670	3024	2948
Consumption	1667	1857	1904	1985	1995	1889	2242	2382	2413	2443	2591	2607	2678	2883	2924	2691	2799	2754.5	2832	2873	2978

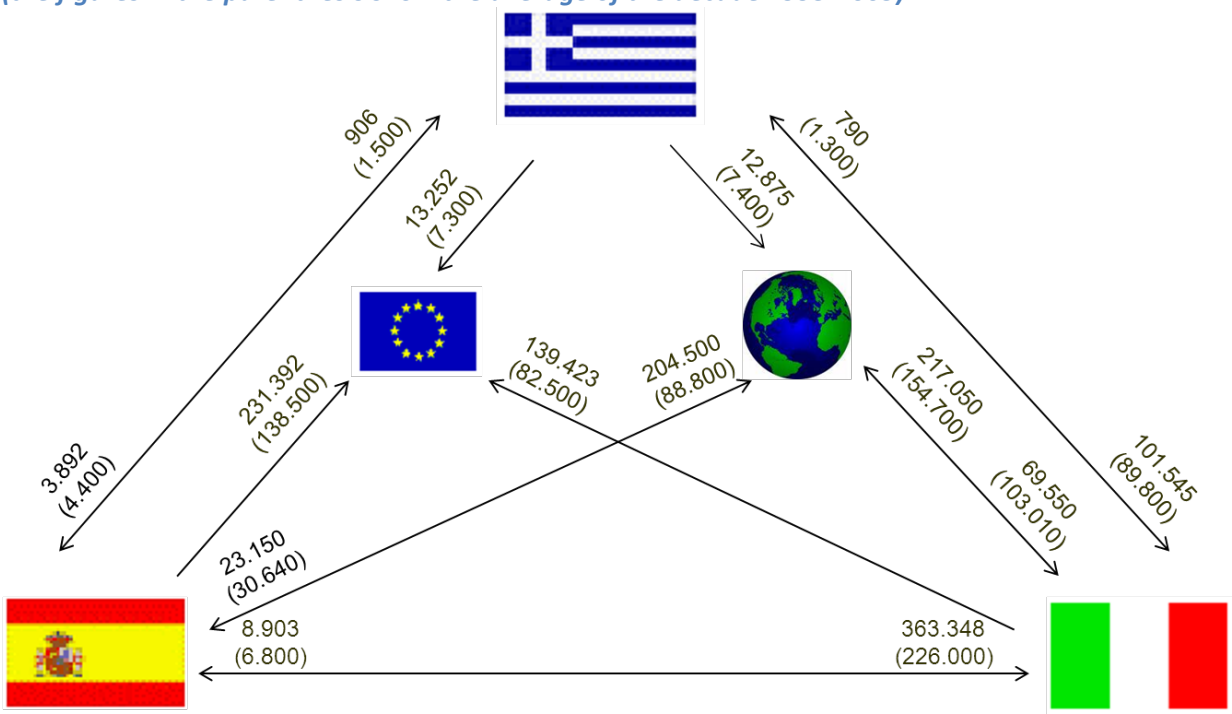
Source: Jean-Louis Barjol in the Conference OLIVE & OLIVE OIL, Athens 2011, speech titled «European Union and International Olive Committee»

Equally worrying is the prediction that by 2020 the Spanish production will be fluctuated, depending on the yields, from 1.443.000 tons per year to 1.860.000 tons with an average prediction of 1.667.000 tons (E.C.Europa.EU., 2012a), even though this prediction has already been overstepped by the current situation (data).

This relevant balance between supply and demand keep the producer prices very low. But olive oil and especially the extra virgin olive oil is not a commodity like sugar or wheat. Its qualitative differentiations allow the trading success with high prices that correspond to special features (Gazagnes,2001).

Closing this part of the study we will present a graph with the main flows of the international olive oil trade.

Graph 6. International Olive Oil Trade. Annual average for the period 2009-2013 (in ktons) (the figures in the parenthesis show the average of the decade 1995-2005)



Source: Researchers' data processing from Table 26 and EUROSTAT

We have to point out that:

1. Spain surpassed Italy in the branded olive oil exports, being undoubtedly the world leader
2. Spain by producing huge quantities, controls the Italian market (and industry) supplying it with over 360.000 tons in bulk
3. The reality for Greece is much more disappointing not only due to the inconsiderable quantities exported (of branded name olive oil – around 25.000,00 tons), but also because it is behind even from Portugal
4. It is well known that Greece "sells" its highest quality of olive oil in very low prices and in bulk. It is worth reading Dan Flynn's interview, who is the Executive Director of UC Davis, entitled «The qualitative Greek olive oil is "lost" in mixtures with downgraded oil» (Olive and Olive Oil Magazine, issue 80, June 2012). On the other hand this seems to be the only solution for the Greek olive oil, because if the Italians don't buy, the Greek olive oil will remain unsold (Vacontios, 2001).

Finally, in terms of the international olive policy, if someone reads the geo-political aspect of the world olive oil map (essentially between the Mediterranean countries), he will distinguish many common features in Greece and Italy compared to all the other countries, namely the Iberia Peninsula and the Arc of North Africa, Middle East and Turkey.

The main common characteristics of Greece and Italy are (USITC, 2013):

1. Small holding (see Note 47 and Table 25 in Chapter 2)
2. Cultivation of labor intensive
3. Extremely big number of oil milles
4. High production cost both for olive (in the olive grove) and olive oil

5. Common policy of bad use and waste of community subsidies and financing
6. Long cultural heritage

The above mentioned remarks do not have a "philological character". If they really exist, they can and should become the basis for the cooperation of the two countries in sectors like the productive reconstruction, research and knowledge dissemination, the appropriate exploitation of the community programs (initiatives), the adoption of common positions within E.U., as well as in IOC, the promotion of consumption etc.

Image 7.The "Geopolitical map of the "olive" Mediterranean

Source: This map comes from an older IOCs' campaign for the promotion of consumption

D2. The global olive market

As already commented above, the table olive sector has different characteristics from this of olive oil. But this sector never had the same attention and sufficient research. In Table 27 we cite the main equilibrium data of the world market for the period 1990-2014.

Table 27 – The global average balance for table olive

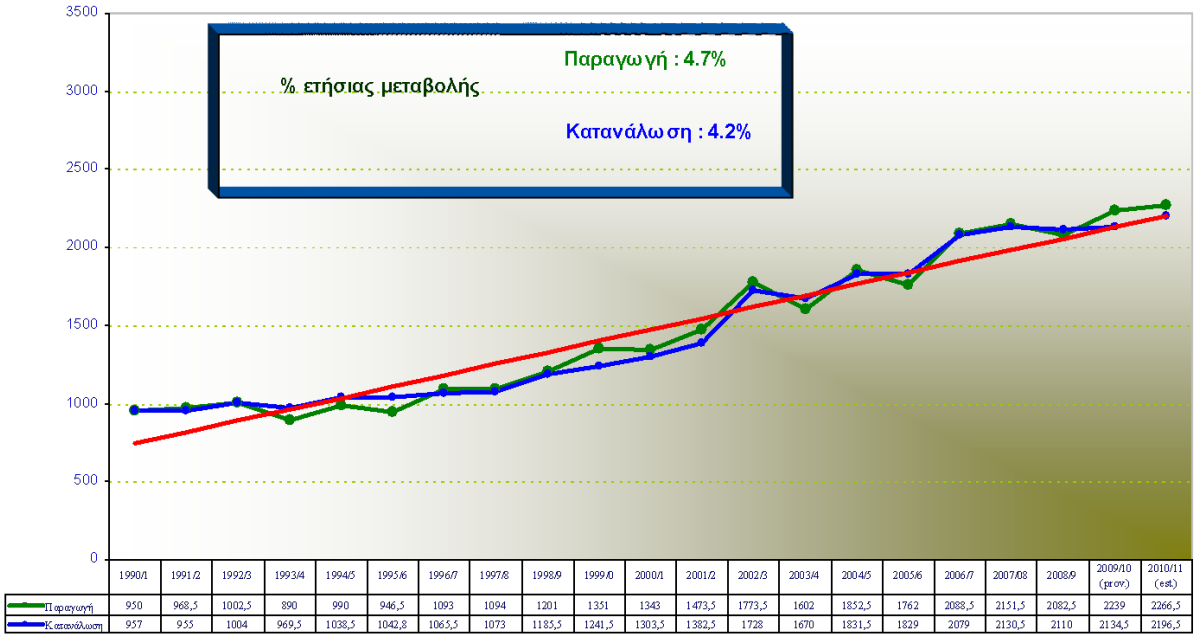
TABLE OLIVE PRODUCTION	AVERAGE 1990-1994	AVERAGE 1994-1998	AVERAGE. 1998-2002	AVERAGE. 2002-2006	AVERAGE 2006-2010	AVERAGE 2010-2014	DIFFERENCE BETWEEN 2010-14 AND 1990-94	
							IN QUANTITIES	%
GREECE	68	69	96	112	69	130	62	6125,0
SPAIN	232	248	445	496	508	533	301	29992,5
ITALY	73	70	61	64	66	74	1	2,5
PORTUGAL	18	9	10	10	14	11	-8	-860,0
EUROPEAN UNION	392	398	615	692	697	752	359	35832,5
MOROCCO	81	90	86	95	95	103	21	2025,0
TUNISIA	13	12	11	18	18	23	10	875,0
TURKEY	115	152	159	203	283	393	278	27650,0
SYRIA	72	75	100	153	139	166	94	9325,0
TOTAL OF THE 4 MEDITARRENEAN COUNTRIES	281	329	357	468	535	683	403	40175,0
CHILE	7	8	9	9	22	32	25	2387,5
AUSTRALIA	2	2	3	4	3	4	2	50,0
USA	105	93	97	96	50	80	-25	-2625,0
TOTAL	115	104	108	109	74	115		-87,5
GLOBAL PRODUCTION	953	1031	1342	1748	2173	2499	1546	154488,0
TABLE OLIVE CONSUMPTION	AVERAGE 1990-1994	AVERAGE 1994-1998	AVERAGE 1998-2002	AVERAGE 2002-2006	AVERAGE 2006-2010	AVERAGE 2010-2014	DIFFERENCE BETWEEN 2010-14 AND 1990-94	
							IN QUANTITIES	%
GREECE	25	25	26	34	23	16	-9	-975,0
SPAIN	114	111	177	195	171	194	80	7890,0
ITALY	136	116	130	147	126	142	6	507,5
PORTUGAL	19	12	14	13	10	8	-11	-1212,5
NON-PRODUCER COUNTRIES	55	75	103	167	236	277	222	22115
GERMANY	16	22	30	40	51	65	49	4822,5
EUROPEAN UNION	349	340	450	556	566	637	288	28725,0
NOROCCO	35	30	21	35	32	32	-3	-350,0
TUNISIS	12	12	11	17	16	20	8	675,0
TURKEY	97	131	126	152	218	339	242	24100,0
SYRIA	71	73	86	138	113	130	59	5775,0
CHILE	6	8	8	11	24	32	25	2412,5
TOTAL OF THE 4 MEDITARRENEAN COUNTRIES	221	253	252	352	402	552	331	33012,5
AUSTRALIA	8	10	14	18	19	21	13	

BRAZIL	36	48	49	53	71	102	66	6462,5
CANADA	13	16	20	24	26	28	15	1350,0
JAPAN			2	2	3	4	4	287,5
USA	167	167	188	210	218	218	51	4975,0
RUSSIA	2	9	18	43	77	72	70	6912,5
TOTAL	226	250	289	349	413	444	218	21700,0
GLOBAL CONSUMPTION	971	1055	1278	1765	2130	2554	1582	158125,0
TABLE OLIVE EXPORTS	AVERAGE 1990-1994	AVERAGE 1994-1998	AVERAGE 1998-2002	AVERAGE 2002-2006	AVERAGE 2006-2010	AVERAGE 2010-2014	DIFFERENCE BETWEEN 2010-14 AND 1990-94	
							IN QUANTITIES	%
GREECE	16	24	34	37	43	57	42	4062,5
SPAIN	84	88	149	183	195	213	129	12767,5
ITALY	1	1	2	2	3	5	5	377,5
PORTUGAL	3	5	4	5	14	16	13	1225,0
EUROPEAN UNION	103	118	188	227	255	292	188	18732,5
MOROCCO	48	63	67	61	62	71	23	2212,5
TUNISIS	1	0	0	1	2	2	1	-12,5
TURKEY	12	30	35	50	51	68	56	5500,0
SYRIA	0	3	8	20	25	34	34	3275,0
TOTAL OF THE 4 MEDITARRENEAN COUNTRIES	61	96	110	131	141	175	114	11275,0
GLOBAL EXPORTS	208	213	365	476	621	699	491	49000,0
TABLE OLIVE IMPORT	AVERAGE 1990-1994	AVERAGE 1994-1998	AVERAGE 1998-2002	AVERAGE 2002-2006	AVERAGE 2006-2010	AVERAGE 2010-2014	DIFFERENCE BETWEEN 2010-14 AND 1990-94	
							IN QUANTITIES	%
SPAIN	1	6	2	6	6	2	2	57,5
ITALY	4	5	4	7	9	7	2	132,5
GREECE	0	0	0	4	2	4	4	327,5
PORUGAL	0	0	0	0	0	0	0	-115,0
EUROPEAN UNION	105	120	191	232	262	301	196	19487,5
AUSTRALIA	6	8	11	14	17	18	11	1025,0
CANADA	13	16	20	24	26	28	15	1362,5
USA	73	77	103	119	150	139	67	6575,0
BRAZIL	35	47	48	52	71	102	67	6575,0
JAPAN		2	2	2	3	4	4	287,5
RUSSIA	3	3	4	25	77	72	70	6887,5
SWITZERLAND	2	9	18	22	6	6	4	275,0
TOTAL	131	161	205	259	349	368	237	23[illegible]
GLOBAL IMPORTS	212	272	350	466	569	638	426	

Source: International Olive Committee (IOC) and researchers' data processing

Note: The data presented above regarding exports and imports do not include the intra-community trade. It contains all the transactions between European Union and third countries.

Graph 8. The Global Table Olive Production and Consumption Trend



	1990/1	1991/2	1992/3	1993/4	1994/5	1995/6	1996/7	1997/8	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/08	2008/9	2009/10 (prov.)	2010/11 (est.)
Παραγωγή	950	968,5	1002,5	890	990	946,5	1093	1094	1201	1351	1343	1473,5	1773,5	1602	1852,5	1762	2088,5	2151,5	2082,5	2239	2266,5
Κατανάλωση	957	955	1004	969,5	1038,5	1042,8	1065,5	1073	1185,5	1241,5	1303,5	1382,5	1728	1670	1831,5	1829	2079	2130,5	2110	2134,5	2196,5

Source: Jean-Louis Barjol in the Conference OLIVE & OLIVE OIL, Athens 2011, speech titled «European Union and International Olive Committee»

Comparing Graph 5 for olive oil and Graph 8 of table olive we can realise that the trend is the same. In the case of table olive the difference between supply and demand is more limited.

Chapter 2: The Sustainability of the Olive Cultivation

Part A: The Olive Production in Epirus

In order to reach to substantiated conclusions regarding the situation and the sustainability of the olive cultivation in the Region of Epirus (Arta, Preveza, Thesprotia), we are using a sample of sixteen (16) olive producers, eight (8) of them exclusively producing Konservolia, one (1) producing Kalamon, one (1) Lianoelia of Corfu and one (1) with 12 varieties, half of which are Kalamon.

A1. The Olive Groves

Table 28 – Number of acres, allocation per farm and parcel

	Minimum	Maximum	Average
Per Farm	7,0	82,5	30,8
Per Parcel	1,2	31,0	8,9

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, data processing

Table 28a – Number of acres for Konservolia

	Minimum	Maximum	Average
Per Farm	1,2	31,0	8,9

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, data processing

Table 28b – Number of acres for Kalamon

	Minimum	Maximum	Average
Per Parcel	1,9	15,0	8,1

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, Data Processing

Mark 1

The problem of the small and divided holding is evident. We find farms with only 7 acres and olive groves with 1,2 acres.
The average between Konservolia and Kalamon has no significant difference even though we find parcels that reach 31 acres.

Table 28a – Number of olive trees, allocation per farm, parcel and acres

	Minimum Number	Maximum Number	Average
Per Farm	170	1.294	582,7

Per Parcel	20	575	175,9
Per Acre	8	35	18,95

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, Data Processing

Table 28b – Number of olive trees with demarcation between Konservolia and Kalamon

	Minimum Number		Maximum Number		Average	
	Konservolia	Kalamon	Konservolia	Kalamon	Konservolia	Kalamon
Per Parcel	20	45	575	420	160,9	181,5
Per Acre	8	19,5	24,5	35	18,1	22,4

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, Data Processing

Mark 2

The number of trees confirms the observation about the land. There is a remarkable heterogeneity. In some cases the minimum number of trees does not constitute a sustainable professional cultivation. The comparison also shows that Kalamon variety cultivations are more organized to these of Konservolia, obviously because they are younger and cultivated mainly in lowland.

Age and Education of the Olive Producers

Mark 3

Olive producers' age varies from 40 to 68 years (the average is approximately 53 years). The majority was born in the Region and only few of them moved later from other Regions. All of them are Greek. More than 50% of the producers have elementary education and the rest hold a degree from a Technical High School or an Institute of Tertiary Education (University or TEI). The vast majority has a parallel occupation, while very few are exclusively farmers. All of them have inherited the olive groves they cultivate, expanding gradually and enriching their cultivations with new plantings.

Establishment Year and Age of the Olive Trees

The older olive groves have been established in 1930 and the younger in 1990. Respectively, the olive trees age from 80 years till 22 years the youngest.

Mark 4

In general, Kalamon are younger (planted averagely in 1989) and Konservolia are older (planted averagely in 1968)

Altitude

The parcels' altitude starts from 17 meters (Kalamon trees) and reach 200 meters (Konservolia trees). The average is 70 meters (Konservolias' aveage is 105 meters and Kalamon 31 meters).

Table 29 –Soil Slope

	Total	Konservolia	Kalamon
Horizontal	22,9%	8,0%	95,7%
Sloping	52,4%	62,3%	4,3%
Combination	24,6%	29,7%	
	100%	100%	100,0

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, Data Processing

Mark 5

The presence of Konservolia variety in semi mountainous and sloping soils is very important from an environmental point of view, soil protection, preservation of the landscape, that is why it has to be supported.

Ownership Status

Mark 6

The parcels are almost equally divided in proprietary and family owned. The family ones are in most cases larger that the proprietary.

A2. The Production of Olive Products

Mark 7

Konservolia is much more rife mainly in semi-mountainous areas due to historical and soil-climatic reasons. On the contrary, Kalamon planting started only the last few years due to the relatively high prices, its demand as well as the higher profit achieved.

Mark 8

The balance (50-50%) between the Green and the Black Konservolia is not stable. It chang
according to the crop and the olive producer. It depends from several factors, basically

the price that the producer forecasts to receive. Some olive producers avoid to be involved in dangers, such as the weather conditions and the processing costs, so they sell all their production when the fruit is green (Source: interviews with olive producers from the researcher, December 2013).

Mark 9

The olives that are led to oil extraction are mostly Kalamon. This is reasonable given the fact that Kalamon are more sensitive to dacus infection and other diseases.

Mark 10

Kalamon have the lower output per acre and tree, slightly higher is the output of Konsrvolies and significantly higher is the output of Ladolies.

Mark 11

The differences between the minimum and maximum yield are really impressive. Thus, the yield per acre presents a divergence up to 1:6,25 for Konservolies, while the respective divergence is lower, up to 1:2,73.

Mark 12

Regarding the olive oil production, the first observation has to do with the very low quantity per farm (producer) that amounts only 636 kg of olive oil. The maximum quantity produced reaches 2,3 tons but there quite a few cases that the quantity is extremely low (250 kg). Another observation is the remarkable fluctuations, from 10 to 30% of the oil content, which in average has a very low percentage (15,2%). Additionally, extremely low is the oil content of the farm with Ladolies – only 12% - which is considered as not normal.

A3. The Cultivation Cost and Quality Systems

Mark 13

It is unpleasantly impressive that from the producers of the sample only one (in Thesprotia) applies biological agriculture. In the plain of Arta, where a big part is registered as Protected Geographical Indication (PGI) there are many producers who apply a Total Management System. From our research we couldn't make out if this is a conscious choice and adoption of the necessary cultivation techniques or if this happens so that the producers can take advantage of the special subsidy (ποιοτικό παρακράτημα) combined with the fact that these producers belong to the PGI zone.

Table 30 –Percentage Distribution of the Cultivation Works' Cost

	Irrigation	Tillage (Tilling)	Grass Cutting	Weed Killing	Lubrication	Plant Protection	Pruning	Total without Harvest	Harvest	Total Cost
Work Cost Konservolia (%)	0,44	0,08	4,26	4,29	11,05	18,04	25,27	63,43	36,37	100,00
Work Cost Kalamon	2,09	0,38	4,66	0,00	3,88	26,30	20,08	57,38	42,62	100,00
General Total Cost (%)	0,89	0,16	4,37	3,11	9,08	20,32	23,84	61,77	38,09	100,00

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, Data Processing

Mark 14

a) The cultivation of Kalamon results to a significantly higher (approximately 86%) cost of 419,53 Euros per acre compared to this of Konservolia which is 225,45 Euros per acre. The average cost is 258,39 Euros per acre
b) The fluctuation is high as well. Per farm the total cost per acre ranges from 143,04 Euros the minimum to 739,29 Euros the maximum (1:5,2)
c) Per parcel the minimum cost per acre is 87,2 Euros while the maximum reaches 738,63 Euros for the Konservolia variety. For Kalamon the minimum cost is 314,17 Euros per acre and the maximum is 741,05 Euros (1:2,36).

Cost per acre and per parcel

Mark 15a

If in the cultivation cost for the production of table olive we add the sorting cost then Kalamon will have a cumulatively higher cost of over 64,3 % compared to Konservolies. Additionally, the fluctuations between minimum and maximum cost are really impressive. The parcels with Konservolies have a fluctuation of 1:64,6 and these with Kalamon 1:6,1.

Mark 15b

If in the cultivation cost for the production of olive oil (1.559,1 Euros/farm) we add the oil mill cost (261,9 Euros/farm) then the cumulative cost will be 1.821 Euros/farm.

Mark 16

The average cost per farm is 7.162,5 Euros regardless if the farm produces table olives, olive oil or is a mixed farm.

Mark 17

The total expenditure (crop care plus the sorting for the for the table olives, plus the oil mill cost for the production of the olive oil) is in average 274,43 Euros/acre. For Konservolia the cost is 240,48 Euros but for Kalamon reaches 440,47 Euros/acre (83,2% increase). The fluctuation per farm is very high with the minimum cost at 158,18 Euros/acre and the maximum at 807,29 Euros/acre (1:5,1).

Cost per kg produced

Mark 18

a) The average cost of table olives is 0,43 Euros/kg. Kalamon has 41,0% higher cost than Konservolia, namely 0,55 to 0,39 Euros/kg respectively
b) In the farm level the minimum cost per kg is 0,27 Euros and the maximum cost is 0,61 Euros (1:2,26)
c) In the parcel level, the minimum cost per kg for Konservolies is 0,27 Euros/kg and the maximum reaches 1,08 Euros/kg (1:4). The minimum cost for Kalamon is 0,42 Euros/kg and the maximum 0,61 Euros/kg.

Mark 19

The average production cost of olive oil is 3,03 Euros/kg. If the olive oil is extracted from Konservolia the average cost is 2,83 Euros/kg, while the respective cost for Kalamon is substantially higher reaching 3,88 Euros/kg. The fluctuation of the cost per farm is between 2,05 Euros/kg and 4,89 Euros/kg.

A4. Farm Revenues

Mark 20

There is a remarkable fluctuation on the prices achieved by the olive producers (years 2010 and 2011). More specifically, for Konservilia the minimum price was 0,65 Euros and the maximum 1,0 Euros/kg respectively. For Kalamon the minimu was 1,0 Euros/kg and the maximum 1,75 Euros/kg.

Mark 21

Olive oils' selling price is in average: 4,89 Euros/kg. The minimum price was 4,0 Euros/kg and the maximum 5,3 Euros/kg respectively (years 2010 and 2011).

Mark 22

The olive oil produced is characterized as extra virgin, having a very low acidity. This can be explained by the fact that the fruit has been harvested early to be used as table olive and secondarily is led for oil extraction.
It is worth mentioning that the 65% is self-consumed by the oil producers and only the remaining 35% is sold directly to the consumers in bulk (we are all familiar with the no-name 16kg tins).

Mark 23

The average revenue per farm is 15.578 Euros. Again significant fluctuations were observed. The minimum revenue was only 3.530 Euros and the maximum 46.375 Euros (1:13,1). The Kalamon variety has 2,3 times higher revenues compared to the Konservolia.

Mark 24

The average revenue per farm deriving from the sales (without the self-consumption) is reducing at 13.761 Euros. The minimum revenue was 2.780 Euros and the maximum 46.375 Euros (1:16,7).

Mark 25

The average revenue per acre in the farm level is 596,86 Euros. The minimum revenue was 329 Euros and the maximum 1.288 Euros (1:3,9). Kalamon attribute 1.284,04 Euros/acre which is 2,8 times higher of the respective of Konservolia. (456,38 Euros/acre).

Table 31 –Total Revenue (per kg of table olive)

	Konservolia	Kalamon	Total (weighted)*
Selling Price (Revenue)	0,77	1,67	1,00
Community Subsidy	0,17	0,17	0,17
Final Result	0,55	1,30	0,75

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, data processing

Table 31 –Total Revenue (per kg of olive oil)

	Konservolia	Kalamon	Total (weighted)*
Selling Price (Revenue)	4,94	4,13	4,89
Community Subsidy	1,29	1,29	1,29
Final Result	3,40	0,54	3,15

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, data processing
*According to the quantities

A5. The Final Economic Result

Mark 26

If we count in, as a revenue, the value of the self-consumption, then the average of all the farms studied has a positive balance) 8.415 Euros. The minimum is only 963 Euros and the maximum reaches 31.560 (1:32,8).

Mark 27

If we count only the sales without the self-consumption, then the average of all the farms reduces to 6.598 Euros. The minimum records a loss of 165,30 Euros and the maximum reaches 31.560.

Table 32 –The Financial Result of the Farm (in Euros/acre)

	Konservolia	Kalamon	Total (weighted)*
Cultivation Cost	225,45	419,53	258,39
Cost for Sorting (Table Olive)	4,81	17,72	7,00
Cost of the Oil-mill (Olive Oil)	10,22	3,23	9,03
Total Cost per acre	240,48	440,47	274,43
Total Revenue* per acre	456,38	1.284,04	596,86

Final Financial Result per acre	215,90	843,57	322,43

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, data processing
*The value of the olive oil self-consumption has been included

Mark 28

If we count in the self-consumption, then the average of all the farms has a financial result of 322,43 Euros per acre. The minimum is 137,5 Euros and the maximum reaches 876,7 Euros. Kalamon has a financial result of 843,57 which is 390,72% higher than the respective of Konservolia (215,90 Euros).

Mark 29

If we calculate only the value of the sales, then the average for the farms has a financial result of 252,8 Euros/acre. The minimum records a loss of 23,4 Euros and the maximum reaches 876,7 Euros.

Table 33 –The Financial Result in Euros per kilo of olives (for the production of table olive or/and olive oil)

	Konservolia	Kalamon	Total (weighted)
Cultivation Cost	0,381	0,521	0,411
Cost for Sorting (Table Olive)	0,008	0,022	0,011
Cost of the Oil-mill	0,017	0,013	0,017
Total Cost	0,406	0,556	0,439
Total Revenue from sales	0,771	1,596	0,950
Financial Result	0,365	1,040	0,511

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, Data Processing

Mark 30

AIf we count in the value of self-consumption, then the average of the financial result is 0,51 Euros/kg of olive fruit. In the farm level the financial results ranges from 0,11 Euros, the minimum and 1,19 Euros the maximum.

Mark 31

If we calculate only the monetary value of the sales, then the average of the financial result is 0,4 Euros/kg. In the farm level the financial results ranges from -0,02 Euros (loss) the minimum and 1,19 Euros the maximum.

Table 34 –The Financial Result in Euros per kilo of table olive

	Konservolia	Kalamon	Total (weighted)
Cultivation Cost	0,38	0,52	0,41
Cost for Sorting	0,01	0,02	0,01
Total Cost	0,39	0,54	0,42
Selling Price (Revenue)	0,77	1,67	1,00
Financial Result	0,38	1,13	0,58
Community Subsidy	0,17	0,17	0,17
Final Result	0,55	1,30	0,75

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, Data Processing

Table 35 –The Financial Result in Euros per kilo of olive oil

	Konservolia	Kalamon	Total (weighted)
Cultivation Cost	2,41	3,50	2,62
Oil mill Cost	0,42	0,38	0,41
Total Cost	2,83	3,88	3,03
Selling Price (Revenue)	4,94	4,13	4,89
Financial Result	2,11	0,25	1,86
Community Subsidy	1,29	1,29	1,29
Final Result	3,40	0,54	3,15

Source: Project AGROQUALITY, Questionnaires TEI of EPIRUS, Data Processing

A6. Comments and Conclusions for the Olive Farming in Epirus

Mark 32

After having made all these marks, as a conclusion we have to highlight the above:
1. According to Mark 17 a farm with Kalamon results to expenditures of 440,47 Euros/acre, which is 83,2% higher of the respective expenditures of Konservolia (240,48 Euros). But at the same time, according to Mark 25, a farm with Kalamon gives back revenues of 1.284,04 Euros/per acre, namely 281,35% higher than the respective expenditures of Konservolia (456,38 Euros/acre). Consequently, according to Table 32 and Mark 28, a farm with Kalamon has a total net result of 843,57 Euros/acre, namely 390,72% from the respective total net result of Konservolia.

This does not mean that it is feasible and appropriate for the olive producers to start replacing Konservolia or to start expanding Kalamon without thoroughly examine all the soil and climate parameters and definitely after asking for the opinion of a special agronomist (Mpalatsoyras, 1984). Additionally, they have to take into account the commercial possibilities/perspectives of every variety, as well as the cost for the establishment of the initial plant capital (number of years required for a full yield etc).

2. Very significant differences have occurred between olive producers, even between parcels. These differences cannot be explained with the existing data. If someone wants to get reliable conclusions, it would be better to monitor, by recording for a 4 year period in order to include the fluctuation of the production in every detail, the data of a small sample of farms, which though will cover all the types of the olive cultivation

3. For the Konservolia producers there is a choice on the products' selling stage (fresh or processed) and the distinction between green and black olive which includes high risks. The commercial type of Konservolia "naturally fresh in brine", handled with the appropriate process, is considered as a high quality product with respect to its gustatory and aromatic features (Mpalatsoyras, 1992) and (Karnavas et al, 2011). Simultaneously, another important factor is the products' price. It seems that every olive producer choose without being able to have a complete and clear view since several imponderable factors, like the weather conditions and the fluctuations of the demand and the prices, appear. The prices, for example, for the green Konservolia often are affected of the prices of the prices of the Chalkidiki olives, which precede in time. For this reason, the producer needs – apart from the negotiation power – a clear knowledge of the market, therefore timely and correct advice

4. The table olives' production cost notably low, leaving a significant profit margin for the olive producer. In this case the "hidden" (shadowy) costs have not been included. These are costs that almost never do the producers estimate (for example the personal and family workload, depreciation, land annuity, opportunity cost, indirect operating costs)

5. On the contrary, the olive oil production is eminently high. This is because the producers in the plain of Arta are table olive producers, so the olive fruit led to the olive mill is usually premature and with small output (average 15%). Additionally, the olive mill cost is extremely high (68 Euros/ton) combined of course with the low output.

Despite the high cost, the financial result for the producer is positive. This happens because the producer does not sell to traders/standardizers but directly to the consumer, with the well-known in Greece no-name 16kg containers. The solution that would combine the high producers' price with the consumers' safety is what we call "the 5-litre of the producer" (see Chapter 4, Unit A5).

Part B: The Greek Olive Production Cost

The data cited in the following text derive from a study carried out by the University of Patras (Psaltopoylos at al, 2004), ordered from the cooperative ELAIOYRGIKI, in the framework of the Programme O.E.F. rule 1334/02. The study examined two examples of olive producers, one professional and one non-professional, having made as well the separation between high (2003/04) and low (2002/03) yield crops.

B1. Preliminary Notifications and Conclusions

Mark 33

The first important finding is the decisive gravitation of the quantitative crops (alternate bearing) in the formation of the cost per kg. On the contrary, the separation of the professionals with the non-professionals olive producers has an important but secondary importance.
The deviations between the professionals with the non-professionals olive producers are relatively important since they range from 0,45 to 1,88 Euros/kg. The non-professional producer has an average 22,7% higher cost.
These deviations are decisive for the cost when we take into account the fluctuations of the quantity produced (alternate bearing).
The non-productive yields the cost per kg raises by 5,18 Euros/kg (for professionals) till 6,61 Euros/kg (for non-professionals), namely increases 3,8 times.

Table 36 –Cost Comparison of a professional and a non-professional olive oil producer between a productive and a non-productive yield (Euros/kg)

	Productive Year	Non-productive Year	Average
Professional	1,84	7,02	4,43
Non-professional	2,29	8,90	5,60
Average	2,07	7,96	5,02
Difference	0,45	1,87	1,17
Difference %	21,7	23,5	23,1

Source: Psaltopoylos et al. – Elaioyrgiki (2004)

Mark 34

Equally interesting is the comparison of the conventional and the biological cultivations. This is a very interesting finding, which, though, has to be investigated and confirmed. When the yields are good, the biological cultivation has a higher cost of 0,67 Euros/kg or 32,4% which is expected. This relation is totally reversed when the yields are bad. In this case the conventional cultivation has a much higher cost of 3,52 Euros/kg or 44,2%, finally forming the average (lower cost of the biological cultivation of 1,42 Euros or 28,3%).

Table 37 –Comparison of Conventional and Biological Cultivations (Cost Euros/kg olive oil)

	Productive Year	Non-productive Year	Average
Biological Cultivation	2,74	4,45	3,60
Conventional Cultivation	2,07	7,97	5,02
Difference in Euros	+0,67	-3,52	-1,42
Difference %	+32,4	-44,2	-28,3

Source: Psaltopoylos et al. – Elaioyrgiki (2004)

Mark 35

The same study (Psaltopoylos et al., 2004) alleges that the keeping of Good Agricultural Practices ensures the olive producer with significant net income since he achieves a productivity increase which overcomes the additional cost of every cultivation practice. Additionally, the implementation of Total Management ensures not only higher crops in olive fruit/olive oil, but also rational use of inflows (inputs), thus reduction of the cost.

Mark 36

Another important aspect is the operation of the olive mills. In case of constant collective milling, two categories of benefits occur:
a) the reduction of the operational cost by 14,4% (mainly due to the lower labor cost) and
b) the amelioration of the quality of the olive oil produced.

B2. Analysis of the Olive Oil Production Cost in Greece (value chain)

Table 38 –Olive Producer Cost (Euros/kg olive oil)

	Professional		Non-professional		Biological Olive Cultivation	
	Productive Year	Non-Productive Year	Productive Year	Non-Productive Year	Productive Year	Non-Productive Year
Irrigation (a1)	0,03	0,20	0,14	0,27	0,09	0,19
Tillage (a2)	0,23	1,42	0,05	0,06	0,00	0,74
Plant Protection (a3)	0,04	0,18	0,13	0,18	0,20	0,25
Fertilization (a4)	0,10	0,32	0,29	0,43	0,45	0,79
Pruning (a5)	0,08	0,94	0,31	0,33	0,34	0,36
Harvest (a6)	0,91	2,22	0,75	4,14	1,00	1,15
Direct Cultivation Cost (a)	1,39	5,28	1,67	5,41	2,08	3,48
Miscellaneous (b1)*	0,09	0,53	0,19	1,49	0,23	0,41
Fixed Opportunity Cost (b2)	0,00	0,00	0,02	0,18	0,04	0,09
Income from Land (b3)	0,17	1,01	0,23	1,81	0,11	0,24
Indirect Cultivation Cost (b)	0,26	1,54	0,44	3,48	0,38	0,74
Total Cultivation Cost (a)+(b)=(c)	1,65	6,82	2,11	8,89	2,46	4,22
Milling Cost (olive mill) (δ)	0,19	0,20	0,18	0,01	0,48	0,48
I. Total Olive Oil Producers Cost (a)+(b)+(c)+(d)	1,84	7,02	2,29	8,90	2,74	4,45
Per acre	162,67	257,39	226,73	293,05	196,43	258,61

* Insurance Premiums, Equipment Maintenance

Source: Psaltopoylos et al. – Elaioyrgiki (2004)

Table 39 –Oil Mill Cost (Euros/kg olive oil)

	Average
Buildings (a1)	0,025

Mechanical Equipment (α2)	0,057
Equipment (a3)	0,011
Transport Means (a4)	0,007
Total Fixed Costs (Overheads) (a)	0,100
Manpower (b1)	0,100
Salaried (b2)	0,035
Administrative, Scientific Staff (b3)	0,070
Total Labor (b)	0,205
Energy- Fuel (c1)	0,014
Water (c2)	0,002
Telephone (γ3)	0,002
Insurance Premiums (γ4)	0,023
Cars (γ5)	0,034
Miscellaneous (c6)	0,005
Total Intermediate Input (c)	0,078
II. Total Olive mill cost (a)+(b)+(c)	0,383
Cumulative Cost ex-mill (I)+(II)	5,391

Source: Psaltopoylos et al. – Elaioyrgiki (2004)

Table 40 –Standardization Cost (Euros/kg olive oil)

	Average
Buildings (a1)	0,0295
Equipment (a2)	0,023
Transport Means (a3)	0,0025
Total Fixed Costs (Overheads) (a)	0,055
Manpower (b1)	0,105
Salaried (b2)	0,160
Administrative, Scientific Staff (b3)	0,025
Total Labor (b)	0,290
Fuel - Electricity (c1)	0,024
Telephone (c2)	0,009
Rents (c3)	0,005
Insurance Premiums (c4)	0,007
Promotion - marketing (c5)	0,240

Packaging material (γ6)	0,520
Miscellaneous (c7)	0,046
Total Intermediate Inputs (c)	0,851
III. Total Standardization Cost (a)+(b)+(c)	1,196

Source: Psaltopoylos et al. – Elaioyrgiki (2004)

Table 41 –Total Cost for vertically integrated olive oil production (Euros/kg)

	Productive Year	Non-productive Year	Average
Olive oil Producer	2,07	7,96	5,008
Oil Mill	…	…	0,383
Standardization	…	…	1,196
Total	3,649	9,539	6,587

Source: Psaltopoylos et al. – Elaioyrgiki (2004)

Mark 37

The total cost of the final product (ex-factory) ranges from 3,649 till 9,539 Euros/kg with an average of 6,587 Euros/kg.
The olive cultivation cost has a 56,7 to 83 share of the total, depending in if this is a productive year or not.
If we suppose that in the four year period three productive years alternate with one non-productive yield, then the annual cost will reach in average 5,12 Euros/kg.

B3. Analysis of the Table Olive Production Cost in Greece (value chain)

Table 42 –Table Olive Producer Cost (Euros/kg of table olives)

	Professional		Non-professional	
	Productive Year	Non-productive Year	Productive Year	Non-productive Year
Irrigation	0,06	0,21	0,09	0,10
Tillage	0,02	0,00	0,00	0,00
Plant Protection	0,18	0,40	0,34	0,42
Fertilization	0,02	0,06	0,03	0,04
Pruning	0,09	0,24	0,14	0,14
Harvest	0,20	0,51	0,34	0,33

Miscellaneous	0,05	0,06	0,06	0,07
Fixed Opportunity Cost Income from Land	0,04	0,12	0,03	0,04
Cultivation Cost	0,66	1,60	1,03	1,14
Marketing	0,08	0,24	0,27	0,35
Total	0,74	1,84	1,30	1,49
Per acre	817,83	1.048,28	399,42	492,45

Source: Psaltopoylos et al. – Elaioyrgiki (2004)

Table 43 –Manufacturing Cost (Euros/kg of table olives)

	Average
Inland Facilities (Establishments Cost	0,0765
Mechanical Equipment	0,0695
Total Capital (a)	0,1460
Workforce	0,2655
Salaried	0,0850
Scientific Staff	0,0250
Total Labor (b)	0,3755
Packaging Material	0,1300
Fuel – Electricity	0,0080
Telephone	0,0030
Promotion, Marketing	0,0195
Total Intermediate Inputs (c)	0,1605
Total Cost (a)+(b)+(c)	0,6820
A' and Auxiliaries	0,2900

Source: Psaltopoylos et al. – Elaioyrgiki (2004)

Table 44 –Total Cost for vertically integrated table olive production (Euros/kg)

	Productive Yield	Non-productive Yield
Olive Producer Cost	1,02	1,67
Manufacturing Cost	0,682	–
Cost of the Final Product	1,702	2,352

Source: Psaltopoylos et al. – Elaioyrgiki (2004)

Mark 38

The olive cultivations' cost ranges from 60% to 71% of the total cost, depending of the productivity of each yield.

Table 45 –Comparison of the Cultivation Cost between the professionals and the non-professionals table olive producers (Euros/kg)

	Productive Year	Non-productive Year	Average
Professionals	0,740	1,84	1,29
Non-professionals	1,30	1,49	1,40
Average	1,02	1,67	1,35
Difference	0,56	-0,35	0,11
% Difference	54,9	-21,0	+8,1

Source: Psaltopoylos et al. – Elaioyrgiki (2004)

Mark 39

During non-productive crop, the cultivation cost (the average between a professional and a non-professional olive producer) increases by 0,65 Euros/kg (+48,1% compared to the productive crop). This is a much milder difference compared to the respective of the olive oil (Tables 41 and 42).
The element which is difficult to explain is that in the non-productive crops the non-professional olive producer has a lower cost (0,35Euros/kg, 21%) compared to the professional.

Part C: The Lakonian Operational Cost

Another interesting study deriving from the experience of the olive cultivation in Lakonia (Varzakakos, 2012) is based in the following data which the author identifies as "identical":

- 50 acres Arid Olive Grove, 20 trees per acre = 1.000 trees
- Yield 40 kg of olives per tree
- Olive content 22%

The total production is 9.900 kg of olive oil (or 198 kg per acre)

According to the same study the total cost is formed as following:

Table 46 – The Lakonian Operational Cost (Euros/kg of olive oil)

Soil Handling (1)	0,202
Sprays (2)	0,1768
Fertilization (3)	0,1818
Harvest (4)	0,4242
Miscellaneous (5)	0,101
Agronomic Supervision (6)	0,0505
Self-employment (7)	0,7575
Total (a)=1-7	1,8938
Oil mill remuneration (b)	0,256
Grand Total (a)+(b)	2,15

Source: Varzakakos (2012)

Part D: The Spanish Olive Production Cost (value chain, cost of a vertically integrated production)

D1. The Olive Oil cost in Spain

According to a reliable and totally vertical cost research of the Spanish Ministry of Agriculture, (2010) *

Table 47 – The Olive Oil Cost in Spain (Euros/kg)

		Absolute Values		
		Minimum	Average	Maximum
1	Irrigation	0,000	0,036	0,160
2	Plant (Pest) Protection	0,152	0,286	0,527
3	Labor	0,696	0,819	0,974
4	Mechanical Equipment	0,091	0,264	0,412
5	Miscellaneous	0,158	0,330	0,630
6	Opportunity Cost	0,352	0,558	0,677
	Olive Oil Production Cost	**1,449**	**2,293**	**3,380**
7	Profit or Loss	0,334	-0,060	-0,828
	Olive Oil Producer Price	**1,783**	**2,233**	**2,552**
8	Reception and Milling (Ground)	0,015	0,046	0,257
9	Marketing and General Expenses (Overheads)	0,071	0,151	0,429
10	Oil Mill Profit or Loss	0,566	0,029	-0,680
	Oil Mill Price	**2,435**	**2,459**	**2,558**
11	Elaboration (Processing)	0,045	0,121	0,150
12	Packaging	0,118	0,173	0,241
13	Assembling, Logistics, Distribution	0,035	0,054	0,103
14	Financing	0,059	0,216	0,275
15	Standardizer Profit	0,133	0,063	0,085
	Standardizer **Price**	**2,825**	**3,086**	**3,412**
16	Logistics and Storage	0,000	0,021	0,105
17	Distribution	0,000	0,011	0,055
18	Retailing, Super Market	0,002	0,084	0,186
19	Retailing Profit	0,040	0,035	0,391
	Retail Price	**2,867**	**3,237**	**4,149**
	Final Price (Including VAT)	**3,068**	**3,464**	**4,439**

* Ministerio de Medio Ambiente Y Medio Rural Y Marino – Agencia Para el Aceite de Oliva, 2010, The olive value chain

Mark 40

a) The olive producer cost ranges from 1,449 (minimum) to 3,380 (maximum) with an average of 2,293 Euros/kg. 50% of this cost comes from expenditures that the Greek olive producer rarely estimates (opportunity cost, miscellaneous, mechanical equipment)

b) Only these olive producers with the minimum cost (1,449 Euros/kg) can sell with a profit (0,334 Euros/kg). On the contrary, the producer with high production cost is obliged to sell in loss (0,828 Euros/kg). The average producer sells with a margina loss as well (0,060 Euros/kg).

c) In the ex-mill prices the differences are almost annihilated from 2,435 the minimum to 2,550 Euros/kg the maximum

The same happens for the Oil Mills. Only these who operate with the minimum cost (0,086 Euros/kg) as a profit of 0,556 Euros/kg. On the contrary, when he operates in a high cost (0,686 Euros/kg) then he sells with a loss of 0,688 Euros/kg. A very small profit of 0,029 Euros/kg appears for the average producers

d) The retailing (without the VAT of 7%) records profits from 0,035 to 0,391 Euros/kg

e) The four links of the Agro-food chain (Olive Producer, Oil-Mill, Standardizer and Retail Store) create a cost that ranges and is allocated as following:

Table 48 – Costs, Profit and Loss in Spanish Olive Oil Production (Euros/kg)

Sum of all Costs	Participation of the cost in the final price %	Sum of the remaining profit or loss	Allocation of Profit or Loss				Final Price (without VAT)
			Olive Producer	Oil Miller	Formulator	Retailing	
1,794 (min)	63	+1,073	+0,334	+0,566	+0,133	+0,040	2,866
5,180 (max)	126	-1,062	-0,828	-0,688	+0,063	+0,391	4,118
3,171 (average)	97	+0,089	-0,060	+0,029	+0,085	+0,035	3,260

Source: Table 46

f) From the Table cited above, it is obvious that the standardizer and the retail store have always, even a marginal profit. The Olive-Mill has a loss only if it operates in its maximum cost

On the contrary, the olive producer is in the less favorable position, since he enjoys a profit only in case he operates in the minimum possible cost. This shows, above all, how necessary is the Community aid no matter how it is formed and calculated.

Another study for the olive cultivation cost in Spain (AEMO, 2010) presented the following results:

Table 49 – Total Costs of the Spanish Olive Production per Farm Type (Euros)

Cultivation System	Total Cost/ hectare (Euros)	Average Production (kg of olive)	Cost/kg of olive (Euros)	Milling(Ground) Cost/kg of olive (Euros)	Cost/kg of olive oil (Euros)
Traditional Olive Grove (non-mechanized)	1.023,2	1.750	0,58	0,03	3,06
Traditional Arid Olive Grove (mechanized)	1.448,2	3.500	0,41	0,03	2,20
Traditional Irrigated Olive Grove (mechanized)	2.197,2	6.000	0,37	0,03	1,97
Intensive Arid Olive Grove	1.528,4	5.000	0,31	0,03	1,66
Intensive Irrigated Olive Grove	2.305,4	10.000	0,23	0,03	1,29
Hyper intensive Olive Grove	2.366,2	10.000	0,24	0,03	1,32

Note: 1 hectare: 10.000 m^2
Source: AEMO, 2010

Mark 41

The costs keep up with those of Table 47, expounding the fluctuations between the different types of olive groves and cultivation.

D2. The Table Olive Cost in Spain

Table 50 – The Table Olive Cultivation Cost in Spain (Euros/kg)

	Average
Plowing	0,0050
Plant (Pest) Protection	0,0400
Herbicides	0,0164
Fertilization	0,0460
Pruning	0,1809
Harvest	0,4112

Cultivation	0,6995
Producers' Profit or Loss	-0,1853
Selling Price	0,5142
Subsidy	0,1080
Final Result	-0,0773

Source: David Garcia Brenes, University of Seville, The Table Olive Value Chain in Spain

Mark 42

The olive oil producer sells with a loss which marginally is not covered by the Community Subsidy.

Table 51 – The Table Olive Standardization Cost in Spain (Euros/kg)

Table 51a– A' Standardization Phase

Labor	0,05
Salt	0,02
Waste Management	0,01
Depreciation	0,03
Other (Electricity)	0,01
Total Standardization Phase A'	0,12

Source: David Garcia Brenes, University of Seville, The Table Olive Value Chain in Spain

Table 51b– B' Standardization Phase

Labor	0,04
Salt and additives	0,01
Filling*	0,07
Packaging Material	0,70
Conservation	0,02
Depreciation	0,01
Other (electricity, consumables, operational costs, overheads)	0,08
Total Standardization Phase B'	0.93

Source: David Garcia Brenes, University of Seville, The Table Olive Value Chain in Spain

Grand Total Formulation Phases (A')+(B')	1,05

Source: Tables 50a and 50b

Table 52– Table Olive Total Cost in Spain (Euros/kg)

Cultivation	0,70
A' Standardization	0,12
B' Standardization	0,93
Total Cost	1,75

Source: David Garcia Brenes, University of Seville, The Table Olive Value Chain in Spain

Mark 43

If we take into account that the producers' selling price is 0,51 Euros/kg (namely in loss) then the total cost is 1,56 Euros/kg.

Part E: Review and Comparison of the Olive Oil Production Costs

Table 53– Review of Olive Oil Production Cost (Euros/kg)

	Epirus(1)	Greece(2)	Laconia(3)	Spain(4)
Direct Cultivation Cost (a)	2,41 2,61 3,49	1,39 3,438 5,41	…	0,939 1,405 2,073
Indirect Cultivation Cost (b)	…	0,26 1,426 3,48	…	0,510 0,888 1,307
Total Cultivation Cost (a)+(b)=(c)	2,41 2,61 3,49	1,65 4,864 8,89	1,894	1,449 2,293 3,380
Oil Mill Compensation (δ)	0,42 0,41 0,38	0,01 0,145 0,20	0,256	…
Olive Producers' Total Cost (c)+(d)=(e)	2,826 3,027 3,869	1,84 5,008 8,90	2,150	1,449 2,293 3,380
Oil Press (Mill) Cost (f)	…	0,383	…	0,086 0,197 0,686
Ex-mill Cost (e)+(f)=(g) ±profit/loss			…	2,434 2,460 2,550
Standardization Cost (i)		1,160 1,197 1,235	…	0,257 0,564 0,769
Ex-factory Cost (j)=(g)+(i)		3,597 6,587 9,576	…	2,824 3,109 3,382
Retail Cost (k)	…	…	…	0,002 0,116 0,345
Total Shelf Price (l)=(j)+(k)	…	…	…	3,067 3,488 4,406
Per Acre	274,43	234,96	425,7	102,3-230,5

Source: Tables: 35, 38, 45 and 46

Mark 44

It is clearly confirmed what we have mentioned in the prologue. Depending on the specific case and the method used, someone can conclude to data with severe differences. However, the comparison of all these data lead to the following undoubtable conclusions:

1) The data for Epirus (1), even though they refer to olive oil coming from table olives led to the oil mill, is comparable with the data from Elaioyrgiki (2). In reality, the average of conventional olive oil from Elaioyrgiki is 0,828 Euros/kg higher than the one of Epirus (31,7%)

2) The cost of olive oil coming from Kalamon is significantly higher than this of Konservolia (1,05 Euros/kg or 37,1%)

3) From Elaioyrgikis' data the most important conclusion is that the basic factor of the cost per kg are the yields, namely if we are talking for a good or a bad year. We see that in a non-productive yield the average cost increases from 1,53 Euros/kg to 5,345, namely 3,815 Euros/kg (or 249,3%)

4) On the contrary, Elaioyrgikis' data do not confirm that the non-professional olive producer has higher cost than the professional. The difference is 0,205 Euros/kg (6,2%)

5) Moreover, Elaioyrgikis' data do not confirm that biological olive cultivation has higher cost than the conventional one. On the contrary is reduced, especially for the professional olive producer. The average data show that the conventional has 0,883 ε/kg (34,6%) higher cost than the biological one

6) The total cultivation cost for Laconia (3) coincides with the respective of Elaioyrgiki only when we take into account a good productive yield

7) The total cost for Epirus is significantly higher for the oil mills' compensation (182,8% from Elaioyrgiki and 60,2% from Laconia.

8) The most impressive differences are presented in how much lower is the cultivation cost for the Spanish producer (6). Even if we do not acknowledge the lowest cost (0,939 Euros/kg) the average (1,405 Euros/kg) is still lower than the respective averages of all the other studies:

- From TEIs' study (1) = 1,219 Euros/kg (46,5%)
- From the good yield year (2) = 0,125 Euros/kg (8,2%)
- From the bad yield year (3) = 3,94 Euros/kg (73,7%)
- From the average of the Greek conventional (4) = 2,033 Euros/kg (59,1%)
- From the averages of the Greek biological (5) = 1,15 Euros/kg (45%)

9) Hence, the only case where the Greek olive oil is, from the price aspect, relatively competitive to the Spanish is only the years of the very good Greek yields.

E2. Review and Comparison of the Table Olive Production Costs

Table 54– Review of Table Olive Production Cost (Euros/kg)

	Epirus[1]	Greece[2]	Spain[4]
Direct Cultivation Cost (a)	0,381 0,411 0,521	0,830 1,108 1,385	
Indirect Cultivation Cost (b)	…	…	
Total Cultivation Cost (a)+(b)=(c)	0,381 0,411 0,521	0,830 1,108 1,385	0,6995
Sorting Cost (d)	0,008 0,011 0,022	…	…
Fresh Fruit Cost (c)+(d)=(e)	0,389 0,422 0,543	0,830 1,108 1,385	
Trading Cost (f)	…	0,175 0,235 0,295	
Olive Producer Cost (e)+(f)=(g)	…	1,005 1,343 1,680	
Olive Producer Profit or Loss (h)	…	…	-0,1853
Fresh Fruit Selling Price (i)=(g)+(h)	…	…	0,5142
Formulation Cost A' (k)	…	0,682	0,12
Formulation Cost B' (l)	…		0,93
Total Cost (m)=(i)+(k)+(l)		1,687 2,025 2,362	1,5642

Source: Tables: 33, 43, 49 and 50

Mark 45

a) From the study of Elaioyrgiki Greece presents a significantly increased cultivation cost of 169,6% compared with the respective of Epirus and of 58,4% with Spain. This happens mainly due to the higher cost of the non-productive yields

b) Epirus has lower cultivation cost comparing to Spain (41,2%). It is important to highlight that the Spanish olive producer sells with a loss of 0,1853 Euros/kg which is partly covered from a Community aid of 0,1080 Euros/kg

c) In Elaioyrgikis' sample cost the standardization cost (0,682 Euros/kg) is by 0,368 Euros/kg (35%) lower than the respective of Spain

d) However, due to the high cultivation cost of the non-productive yields, Greece has a higher final cost of 29,5% compared to Spain, which is limited to only 7,9% the productive years.

Part F: Comparative Studies for the Olive Cultivation in Spain, Italy and Greece

Unit F1

A study of the European Commission [E.C.Europa.EU, 2012] for the olive cultivations in three countries – Spain, Italy, Greece, presents some quite interesting data and conclusions to be discussed. It is important to mention that in some cases this data is insufficient and of a doubtful reliability of the statistics that some Member States provide to the community services. Some typical examples are the quantities produced, hence the quantities consumed, of the olive oil (in Italy and Greece) that keep up with the subsidies of previous years rather than the objective estimations of the market. As far as the Regions are concerned, in Spain and Italy the classification has been done separately for every Region, while in Greece the Regions have been condensed in two units. The first one includes Crete, Central Greece and Aegean Islands while the second includes Peloponnese, Ionian Islands and Epirus. This makes impossible to extract safe conclusions for Epirus for example. Apart of all these problems this study helps us find some really useful remarks within the framework of the three countries comparison.

Mark 46

Spain has the bigger proportion of large producers while on the contrary in Italy and Greece small producers are the majority.

Table 55 – Average Size of Cultivations (in acres)

Spain: 53	Italy: 13	Greece: 16

Source: E.C. Europa.EU, 2012α

Table 56 – Producers' Percentage according to their Annual Income per Family Working Unit (FWU)

	Spain	Italy	Greece
Less than 5.000 Euros	25%	30%	37%
More than 30.000 Euros	11%	10%	3%

Source: E.C. Europa.EU, 2012α

Despite of the data of the above Table, Italy holds the first position in the scale of the annual income per Family Working Unit (FWU), Spain is second and Greece third.

The main factors that lead to the creation of high incomes are: a) the big size of the cultivation, b) the small participation of the family work, c) the high productivity and d) the high selling prices of the product.

Table 57– Average Yield in Olive Fruit and Olive Oil per hectare in Spain, Italy and Greece (quantities in kg per acre)

	Olive Fruit for Olive Oil	Olive Oil
Spain	330	…
Italy	500	92
Greece	…	72

Source: E.C. Europa.EU, 2012α

Additionally, for the same period 2000-2009, the average producers' selling price for olive oil in Italy was 4,283 Euros/kg, in Greece 2,828 Euros/kg and in Spain at the same level.

Mark 47

The period 2000-2009 in Spain is characterized by a 38% reduction of the income per work unit, in Italy by an increase and in Greece by an increase for the period 2000 -2005 and by a reduction till 2009.
In general, the conclusion is that the financial situation of the olive producers in the three countries has deteriorated. That is why the olive producers' income evolution was the worst compared to all the permanent cultivations (E.C. Europa.EU, 2012).

Unit F2

Table 58 – Comparison of the Olive Oil Production Cost between Italy and Greece

	Italy	Greece
Fertilisers (a1)	0,175	0,207
Plant Protection (a2)	0,083	0,083
Fuels (a3)	0,194	0,131
Water (a4)	0,010	0,046
Miscellaneous Costs (a5)	0,354	0,047
Total Costs (a)	0,815	0,515
Buildings and Equipment Maintenance (b1)	0,091	0,099
Energy (b2)	0,013	0,025
Services Payments (b3)	0,071	0,150
Other Direct Costs (b4)	0,197	0,060
Total Costs (b)	0,372	0,334
Depreciation (c1)	0,603	0,596
Salaries (c2)	0,789	0,246
Rents (c3)	0,035	0,054
Interest (c4)	0,0017	0,003
Total (d) = (a)+(b)+(c)	2,616	1,748
Family Work (e1)	2,452	2,504
Privately Owned Land and Capital	0,112	0,174

Cost (e2)		
Total (e)	2,564	2,678
Grand Total (f) = (d)+(e)	5,180	4,426

Source: E.C. Europa.EU, 2012α

It is worth mentioning that the Italian olive producer has an olive fruit cost for olive oil production of 818 Euros/ton while the Spanish producer has 635 Euros/ton respectively (E.C. Europa.EU, 2012).

Unit F3 – U.S.A.

Mark 48

Equally interesting are the findings of an independent committee of USA (USITC, 2013), which by the way have a significant trading interest if we consider that USA is the bigger olive oil importer in the world (300.000 tons).
The above mentioned findings show:
a) Spain has one of the lower production costs in the world
b) The period 2006-2009, the average cost of all cultivation types (traditional, intensed, hyper-intensed) in Spain was 287 Euros/tn while in Italy was 334 Euros/tn
c) In Italy the olive oil production cost vary according to the Region: 3,53 Euros/kg in Puglia, 3,64 Euros/kg in Calabria, rising to 5,80 Euros/kg in Central and Northern Italy
d) In Italy the tree pruners are highly demanded professionals with a compensation of 140 Euros per day, while the yielding workers have a compensation of 70-80 Euros per day
e) For Greece, apart from the recognition of its high quality olive oils, it is highlighted that has the higher production cost compared to the other countries. The reasons are:
- Small traditional olive cultivations
- aged olive groves with a productivity on the decline resulting to high cost per unit
- Big percentage of non-irrigated olive groves
- High compensations of the work force even when the productivity is low
- Only 50% of the olive producers considered as professionals while the rest are based to other activities to supplement their income
- The functioning cost is high as well in the olive mills sector which is dominated by small units of old technology and are unable to achieve yields of scale.

Chapter 3: The Framework of the Common Agricultural Policy (CAP)

3.1. The expected new CAP

At the time our study is written, the CAP is in front of a radical reform for the period 2015-2020. Apart from the four basic Regulations 1305/2013, 1306/2013, 1307/2013 and 1308/2013 that were co-decided by the Board of Ministers and the European Parliament (which has obtained increased participation competences in decision making), the Delegation Acts are expected. The Delegation Acts define the more specific implementation framework. However, a very crucial part of the decisions will be made by the Member States and because the Greek Ministry of Agricultural Development and Food has not disseminated its intensions yet, we are obliged to wait.

Two are the most crucial points of the new CAP for our country:

a) The reduction of the available budget, firstly because the CAP s' total budget is reduced as well and secondly, because a transfer of resources will be made from the old Member States (including Greece) to the new Member States (the EU's expansions to the East). This transfer partly redeems a balance as with the current status there are big inequalities in favor of the old and at the expense of the new Member States

b) A new model, the Regional, will be adopted but we still miss the criteria the Greek Ministry will implement. With the regional model, the land aid that the producers, acting within every Region, will receive, is equalized. The classification in the Region level can be done with criteria: administrative (Regions/Prefectures), geographical (lowland, mountainous, islands, etc), agronomic or a combination of the above

Regarding the direct aids, the Greek budget will be reduced by 269,4 million euros or 12,15% compared to 6,92% which is the average of the EU.

The available budget for Greece for the period 2014-2020 compared to the corresponding of 2007-2013 will be reduced by 233,7 million euros (-5,9%).

3.2. Some Remarks for Epirus

From the analysis of the different scenarios (PASEGES, 2014) is emerged that by implementing the Regionalization Model Epirus will benefit in such a degree that will, most probably, counterbalance the reduction of the total amount available for Greece. This derives from the fact that the new CAP will bring balance points, not only between old and new Member-States, but within every country. This, obviously, will depend on from every country's choices. In this point we have to highlight that just because olive cultivation had one of the higher aids (regardless the method of calculation, per kg or per acre), it is highly likely that Greece will be one of the "losers" of the new CAP.

However, it is worth mentioning some data related to the relevant position of Epirus compared to other Regions, always according to PASEGES study which is based on data of the Union of Agricultural Cooperatives.

a) Distribution of the United Aid (year 2012)

	Beneficiary		Aid Size	
	Number	Percentage (%)	Value (Euros)	Percentage (%)
Epirus	21.228	3,04	57.202.504	2,70
Greece (Total)	699.384	100,0	2.120.276.754	100,0

b) Clear inequalities are presented not only between Regions, but even bigger between Prefectures of the same Region. One of the Regions with a relevant balance is Epirus.

c) Distribution of the United Aid according to eligible areas (2012)

	Option Value (k Euros)	Eligible Areas exc. pastures (k acres)	Eligible Areas of pastures (k acres)	Total Eligible Areas (k acres)	Average Value (Euros/acre)
Epirus	57.203 (2,70%)	450 (1,61%)	2.580 (10,04%)	3.040 (5,67%)	18,82
Greece (Total)	2.120.277	27.940	25.690	53.630	39,54

The higher United Aid is received by Crete, 62,8 Euros and the lower respectively by Epirus.

d) The total potentially eligible areas is divided in cultivations and pastures, in lowland and mountainous areas (in k acres, 2012).

	Lowland Areas			Mountainous Areas			Total		
	Cultivations	Pastures	Total	Cultivations	Pastures	Total	Cultivations	Pastures	Total
Epirus	170 (1,78%)	110 (7,59%)	280 (2,53%)	280 (1,53%)	2.480 (10,23%)	2.750 (6,46%)	450 (1,61%)	2.580 (10,04%)	3.040 (5,67%)
Greece (Total)	9.590 (100%)	1.450 (100%)	11.050 (100%)	18.340 (100%)	24.240 (100%)	42.580 (100%)	27.940 (100%)	25.690 (100%)	53.630 (100%)

3.3. A Brief Historical Back and Useful Conclusions for the Future

The Beginning, 1966 and Continuation

The Common Market Organization (CMO) of olive oil established with an historical regulation, 136/1966, in 1966, an era when the only olive producing country of the 6 States EEC was Italy and France with a negligible production. The CMO was one of the more well - organized CMOs' with very high funding. The explanation can be found in the fragile socio-political balances of the Cold War era, when the Communist Party of Italy asserted the power in Italy.

Greece joined this status in 1981, followed, with slightly unfavorable conditions, Spain and Portugal in 1986 (Zampounis, 1983). The olive sector in Spain faced a number of serious problems. The production was 500.000 tons (less than 1/3 of the current) and exports were approximately 100.000 tons (less than 1/8 of the current). The whole infrastructure of olive groves, oil mills, distribution and storage was facing serious problems, resulting negatively to the product quality as well as its prices. The case of the nutritional scandal[1] was recent for Spain with a direct result the full ban of the no-name bulk «olive oil» which was broadly consumed. Retrospectively, we can acknowledge that in the last 30 years, Spain managed to become the leading country through the implementation of a comprehensible developmental oleic policy (see also Chap.7). This analysis is getting far out of our study's framework, however it is worth mentioning that the Spanish progress was based on the appropriate use, investment and not spending of the Community's funds. Spain did not follow the over-evaluated model and the individual spending.

The Mechanisms from 1966 and how they faded away in time

The initial olive oil CMO which lasted till 2005/06 included the following goals with the respective mechanisms:

- Securing of the producers' income: Providing the **Production Aid** (450,6 drachmas/kg). In the beginning this aid referred to unlimited quantities but from 1998 a maximum limit per country was enacted (420 thousand tons for Greece). However, Greece managed (!) to surpass these limitations and this resulted to the proportional reduction of the per kilo aid in order for the total amount to remain stable. This aid was received also from the table olive producers with a 13% factor. Additionally, an increased aid of 200 kilos was predicted for the "small producers" as well as a subsidy for the establishment of the Olive Cadastral Map, a deduction for the Cooperatives (and ELAIOURGIKI) and one for dacus-cide.
- Protection of producers' prices from the stock accumulation: The mechanism of **Intervention** was in power with the guaranteed **Intervention Price** in which the European Commission was buying their products when the market couldn't absorb them. It was abrogated in 1998
- Support of consumption against the competitive plant oils: Providing the C**onsumption Aid** to industry for the olive oil and seed oil standardization in up to 5 lit packaging. It was abrogated in 1998 as well since it reached to uncontrolled quantities (Greece reached 180.000 tons with 130 drachmas/kg)
- Protection against Third Countries: a) Imposing **Import Duties** from which only some quantities from Tunisia (preferential agreements) were excluded, b) Providing **Export Return Aid** for the exports outside EU. Unfortunately, even though these aids were a very important motivation, Greek Enterprises did not took advantage of it at all (only 1,6% of the total cashing from the Community's budget). Additionally, there was a number of Provisions (principally Regulation 2568/1991 which is still in force) that determined the authenticity and quality parameters with exhausted details (28 in number) as well as the analytical chemistry methods used for their specification.

[1] It was the "informal pneumonia" resulted to thousands of intoxications and hundreds deaths which caused the "Toxic Olive oil Syndrome" (TOS). The intoxication came from a refined rapeseed, mixed with industri aniline, which was sold as "olive oil" mainly through a network of itinerant traders in the more neighborhoods of the large cities.

The recent period 2005/06 till 2013/14

The first specific period lasted from 1996 till 2005/06, when the subsidies philosophy changed radically by the "disconnection" from products (and the quantities produced). The subsidies are allocated according the "Historical Rights" that every producer (farmer) had fortified. The total budget for olive oil in Greece amounted to approximately 555 million Euros per year. Every country had the right to allocate a percentage up to 10% in two important actions aiming to the amelioration of the quality and the protection of the environment. The first one is provided directly to olive producers and it is known as "qualitative retentate". It started with a 4% deduction (22,2, million Euros per year) and was reduced gradually to 9 million Euros after the Decisions of the Ministry of Agricultural Development and Food. The second one is granted through three-year Programs to the "Organizations of Olive Oil Bodies" (principally to the Unions of Agricultural Cooperatives) and it reaches 2% (around 11 million Euros per year).

The subsidies represent the 22% of the olive producers' income in Spain and reaches 48% in Greece (E.C. Europa.EU, 2012).

In Spain and Italy the direct subsidies depend on the year and the type of cultivation from 40 to 80 Euros/acre (USITC, 2013). Spain receives approximately 1 billion Euros per year for direct olive oil subsidies. They represent, depending on the year and the type of cultivation, from 22 to 40% of the income with an average of 50 Euros/acre but with high fluctuations from zero to 69 Euros/acre. These subsidies are received by the 85% of the olive producers. **The income from CAP's aids is decisive and allows producers to operate in marginal profit, otherwise the cultivation would not be viable.**

In Italy CAP subsidies are slightly higher than Spain at around 50-80 Euros/acre.

In Greece, subsidies cover almost 50% of the income and correspond to approximately 8.600 $ compared to 15.000 $ in Italy and Spain. Nearly 30% of the cultivations in Greece are not profitable even with the communal subsidies. The profitability of the remaining 70% is based on subsidies and only 20% of it can be profitable without subsidies.

Useful Conclusions

As this period is closing and we are about to welcome the new CAP until 2020, we must formulate some conclusions:

1. The system of "disconnection" in 2005 came up as a necessary compromise in EU's negotiations with the USA and developing countries but can be characterized as a big failure because:

- It disturbed the harmonical relationship that a farmer must have with land and its products, by transforming him to a rentier

- It was based to the "historical rights" of the previous period, hence essentially stabilized and legalized the "excesses" of the past

- Especially in the olive oil sector, due to the deep knowledge and sensibility of the Head of the European Committees'[2] relevant department, Member States had the possibility to provide the subsidy on a mixed (hybridic) system,

- 60% disconnection and 40% with socio-economic-agronomic-environmental criteria. Unfortunately, the political leadership of the Ministry back then, decided on the complete (100%) disconnection under the pressure of the Cooperatives (ΠΑΣΕΓΕΣ)

2. Closing this chapter, it is easy to conclude that in Greece, at least for the olive oil sector there was a waste of an enormous amount, continuous loss of opportunities to restructure and self-reliant development in order to be able to cope with the international competition[3]. Another side-effect was the aggravation of the unethical competition, especially through the "consumption enhancement" which practically destroyed the Greek olive oil standardization industry[4]. Greece did not follow the Spanish model of the virtuous management and the exploitation of the communal funds and preferred the Italian one. After 33 years we can be sure of what was right

3. It is certain that in view of the new period until 2020, and because the time limits have been oppressively narrow, the international position of the Greek olive products (and olive oil) has deteriorated, the management of CAP's capital (subsidies, programs) is of a great importance for the survival and the non-abandonment of the primary capital that we, as a country, possess, for all these reasons we could underline the need:

a) To completely change the priorities and the chapter "CAP, subsidies, programs" to stop being considered as todays' consumption and become tomorrows' investment

b) This means that producers and serious enterprises (private and cooperative) have to understand and be persuaded that it's of their favor

c) To completely change the priorities and the chapter "CAP, subsidies, programs" to stop being considered as todays' consumption and become tomorrows' investment

d) This means that producers and serious enterprises (private and cooperative) have to understand and be persuaded that it's of their favour

e) If (b) happens then there is a hope that all involved in "politics": local Members of Parliament, representatives of the Local Administration, the leadership of the Ministry to get away off the short-term logic of the "political cost"

f) The decisions should be taken based on completed and reliable proposals from specialists

[2] Jean-Marc Gazagnes who unfortunately has passed away

[3] Between 1981 and 2006 Greece received for the olive and olive oil sectors' subsidies the amount of 17,4 billion Euros (Source: OLIVE & OLIVE OIL MAGAZINE, issue 67, Oct.2009, p.30). Hence, till 2014 the subsidies will exceed 22 billion Euros. This amount does not include the funding of development programs.

[4] Having spent 1,4 billion Euros only for the subsidy of private and cooperative standardization industry (2007 prices). This means that for 16 years this amount could have supported the exports of standardized products with 0,86 Euros/kg in order to substitute gradually 100.000 tons of bulk olive oil in Greece. It is important to note that Spain at that time was not organized and did not have the power that holds today.

Chapter 4: The Legal and Economic-Technical Framework of an Investment

Introduction

Examining the issue of the realization of an investment we primarily must distinguish different sectors like:

a) Primary production-olive grove

b) Olive mill for olive fruit processing and olive oil production

c) Olive oil standardization-packaging unit

d) Vertical production-trading unit

e) Table olive processing-trading unit

Before we move on with the examination of these sectors separately, we, in principle, ascertain that we are in a very transitional period with many uncertainties like:

a) The general economic environment, especially the liquidity from the banks as well as the unbearable and continuously changing tax status

b) The expectation of the new CAP, as this will be implemented in our country[5]

c) The Agricultural Development Program that will succeed "Alexandros Mpaltatzis 2007-2013"[6]

d) The expectation of the already announced simplification of bureaucracy and multi-law that are the main obstacles of a new investment[7]

Part A: The Economic-Technical Framework

A1. Primary Production-Olive Grove – General Directions

It is a very difficult decision for someone to move in the countryside and start the profession of the farmer/olive producer, a decision that does not depend on strictly financial data since it is, in principle, a whole life style. It is well known that the last decades the agricultural population is dwindling and ageing. This does not mean that the reverse direction of young people has stopped. Otherwise the famers' profession would have vanished.

It is worth mentioning a new phenomenon, of the cultivation a rather "idyllic" image who tends to ignore many difficulties. This is due to the increasing unemployment rate of the young people especially. This is why a complete knowledge and realistic approach of all the parameters is necessary. We could say that the financial viability (see also Chapter 2) of this enterprise is a necessary but not a capable treaty for someone to take such a decision. Things get easier and simplified in case someone:

a) Continue/inherit the family farm, especially if members of the family are alive in order to help by providing and transferring knowledge and experiences (avoiding though the over - protectionism and leaving free space for modernization and innovation)

b) Already lives and is aware of the territory that olive grove will be established. This case becomes easier if the person exercises a profession that ensures a minimum subsistence income, while at the same time leaves him free time, especially in winter. A good example is the touristic professions

c) Even more identical is the case in which the person is already an olive producer and judges that it's in his benefit to expand by purchasing or renting (with a long – term contract) new olive groves (preferably close to the ones he already cultivates).

What someone should avoid at all costs:

a) Try to establish in an area he is not aware and has no roots,

b) Think that the farmers' profession is like all the other "civic" professions,

c) Must invest in land purchase

d) Resort to bank loans with all the relevant weights deriving from it

e) Last but not least, ensure that he will sell his production based in logical and not over optimistic scenarios for the quantities and the prices he can achieve (see also, Part C, Chapter 7 for "syndrome f").

[5] Regulations of the European Parliament and the Council 1307/13 and 1308/13
[6] Regulations of the European Parliament and the Council 1305/2013, 1301/2013 in eur-lex.europa.eu
[7] Act: "Simplification of the Procedures for Enterprises' Authorization". Available: www.gov.gr/?p=15052

A2. The Subsidized Programs

A very special case is the funded programs, as for example the Program for New Farmers, Measure 112 of the National Strategic Rural Development Plan 2007-2013.

We have to underline that the Program covers the ages between 18-40 years old, funds with an amount of 10.000 – 20.000 Euros and has a total budget of 140 m Euros that will be allocated to approximately 8.000 farmers.

It would be a huge mistake if someone becomes a farmer due to this program. On the contrary, if someone has decided to become a farmer and all that implies and has ascertained the financial adequacy of the project, then he has to move on and when his proposal is accepted and finally financed with this 10 or 20 thousand Euros he can additionally invest this amount to his farm.

A typical example of hope refutation was the final rejection of a 20 m Euros Training Program in Primary Sector for unemployed.

Notably attractive seems the Program of Measure 123A. It subsidizes 50% for the establishing or the modernization or the expansion of small and small-medium enterprises. The content of this Program is innovation, technological equipment in order to improve quality, hygiene and safety of the products. It covers the sector of olive products as well (oil mills, standardization, table olive processing) under specific preconditions. Logically, the prerequisite in this case as well is that the investor disposes the remaining 50% (or at least 25% of the own contribution).

A3. Techno-economic Data of an Investment[8] in an Olive Grove

As we already mentioned, it is preferable to avoid land purchasing, unless it is a real opportunity, for example, a good farm that has been uncultivated but can easily return to high output. Our research didn't gather objective prices for land renting since the permanent answer was "it depends". What is really widespread, as everywhere in Greece, is the concession from the owner and the cultivator is obliged to deliver a part (50% or 33% of the product). These are the so-called in Greek "misaka", which are though a wrong relationship, especially from a mid and short term perspective.

The economic immigrants (mainly from Albania) have started to overcome the period in which they worked as land workers and rent or buy farms.

For a farm which is "naked", without any trees, a detailed research must have preceded, which should include at least:

- Soil Analysis
- The micro climate of the territory, temperatures and their fluctuation, exposure, sunlight, rainfall, frost danger etc (Mpalatsouras, 1992).

[8] Data derived from interviews with local olive producers and unofficial market research

The saplings cost is not important (up to 5 Euros/piece) but it should be calculated that it would take 5-10 years until they start to give fruits for a full yield. For a density of 20 trees/acre the establishment cost is approximated to 400 Euros/acre, while the respective for citrus is 600 and for kiwi 1.200 Euros/acre. It should be noted that olive is preserved as a Specie, as far as the accession in several programs is concerned. The renewal and transformation of the existing olive farms is allowed, adjusting to the soil and climatic conditions of each region and are appointed by the competent Directorate of Agricultural Development.

In the following table, an approximation of the investment that an olive producer (of 50 to 200 acres) will need. This olive producer must be self-reliant in terms of equipment, so that he needs to pay only for the labor he hires.

Table 59– Investment Capital Estimation of a 50 acre Representative Farm (in Euros)

Land Value * (a1)	50.000
Plant Capital (a2)	5.000
Warehouse (a3)	1.000-5.000 (3.000)
Land and Buildings Sum(a)	56.000-60.000 (58.000)
Irrigation System (b1)	2.000-8.000 (5.000)
Tractors (b2)	3.000-4.000 (3.500)
Agricultural Vehicle (s) (b3)	12.000-17.000 (14.500)
Irrigation and Vehicles Sum(b)	15.000-57.000 (36.000)
Milling-Machine (c1)	1.500-3.000 (2.250)
Grass-Cutter (c2)	1.000-2.000 (1.500)
Devastator (c3)	3.000-7.000 (5.000)
Wood-Cutter (c4)	1.000-2.000 (1.500)
Turbine- Sprayer (c5)	1.000-3.000 (2.000)
Pruning-Knives, Scissors (c6)	500-2.000 (1.250)
Olive harvesting rods, Olive sails, harvesting tenters (c7)	3.000-6.000 (4.500)
Equipment Sum(c)	11.000-25.000 (18.000)
Table Olive Sorter (d1)	1.000-3.000 (2.000)
Tanks (d2)	1.000-5.000 (3.000)
Table Olive Processing Sum(d)	2.000-8.000 (5.000)

*For 50 acres

Consequently, a grant total of 86.000 to 158.000 Euros (average 122.600 Euros) arises. After the deduction of the land value the necessary investment is reduced from 36.000 to 72.000 Euros. The interviews' impulsive answers to the relevant question set a limit of 80.000 Euros as the starting point.

It should be highlighted that the selection of varieties, planting density, harvesting methods etc is a very complex issue that cannot be answered with ex-ante "ready solutions" (Lavee, 2011). Additionally read the relevant dialogue:

- Vemmos St. (2010): "Speculation on the over – densed planting", Olive & Olive Oil Magazine, Issue 67
- Vemmos St. (2007): "The restoration of the burnt olive groves and the challenge of the intensive planting systems in Greece", Olive & Olive Oil Magazine, Issue 53
- Arvanitis Th. (2010): "Dense Linear Olive Cultivation Systems", Olive & Olive Oil Magazine, Issue 70

It has been proved that the intensive and hyper-densed planting have a higher cost per acre but a lower cost per product kilo compared to the traditional planting (USITC, 2013).

A4. Olive Oil Mill Investment

The three Prefectures, as in whole Greece, should be considered as saturated, having surplus capability compared to the olive fruit to be managed.

The system that evidently would bring an important economy to the operational cost, as well as an amelioration of the produced olive oil's quality, is the common continuous milling[10]. Here the big obstacle is to persuade not the oil mills but the olive producers who have the mentality of "our own olive oil" that leads to a delivery in many different and small portions.

Assuming though the table olive's low yields, the operational cost as well as the milling costs paid by the olive producers become very expensive and uneconomical, as for example in the plain of Arta with 68 Euros/kg.

Another issue under assessment is the possible needs for modernization and improvement of some olive mills. These include, not only the technological equipment in olive machines but the hygiene conditions of the whole place, the piping and tanks and the available waste management system as well.

In the next chapter we investigate the establishment of the olive oil packaging line.

As we mentioned in the begging of this unit the establishment of a new olive mill plant demands immense capital and moreover it is a saturated activity. This does not exclude the possibility of a small vertical plant (see also Unit A.7.) in which a small semi-automated olive mill of 20.000 to 100.000 Euros would be installed. The slightly used olive mills that hold an adequate guarantee and basically, a guaranteed service, are a very economical solution in this case. An olive mill could play a very important role if it adds a standardization/packaging line even for only 5 liter tins.

A5. The Investment of an Olive Oil Standardization Plant and the "5 liter of the Producer"

The area under assessment is characterized by the distribution from olive oil producers in no-name bulk 16kg tins. This is happening, not only in Epirus, but – in different extent – in all the olive producing regions of the country. This is why the total quantity of the 16kg exceeds the one of the branded standardized (up to 5 liters) olive oil (see also Table 18, Chapter 1).

The juxtaposition is one of the 2-3 more crucial issues – problems of the Greek olive production with no viable solutions for decades. Epigrammatically, we can note down each side's arguments:

Branded-Standardized Olive Oil (up to 5 liters)	No-name Bulk 16kg
Greece has a surplus of 100-120.000 tons. As long as the 16kg packaging dominates the Greek market, the Greek Standardization Industry (Private and Cooperative) will not be able to create the bases in order to become competitive in international markets. This means that we will be depended on the bulk sales in Italy. Since the average export price for the standardized product is 1,0 – 1,5 Euros/kg higher than the price of the product in bulk sold in Italy/Spain, the revenues loss (added value) reaches 80 to 150 million Euros. Today, this added value loss is shared, when it could be capitalized by industries and olive producers as well (individually or through their cooperatives). Along with the producers' virgin olive oil in 16kg tins, a large but unknown quantity of adulterated "oil" is distributed by rovings and cunning persons. These quantities are a direct loss both in product and revenues for the producers as well as the standardization industry.	The producer secures higher income. The 16kg selling price is 4 to 5 Euros/kg while the wholesale price ranges from 1,5 to 3,0 Euros/kg depending on the quality and the supply-demand. This is in favor of the producer even if he is encumbered with the cost and effort for the packaging and distribution. The olive oil industry had, at least for 15 years, opportunities from the ample EU subsidies, not only for standardization but for exporting as well. All these opportunities remained unexploited so industry does not have the right to criticize olive producers.
The virgin olive oil in 16kg, even if it is genuine and not adulterated, will quantitatively be downgraded in a very short time. First of all because it is unfiltered and the residues accelerate the downgrade of the remaining oil. Secondly, because with these	Consumer is supplied straight from the producer (or the miller) with virgin olive oil of a high quality. On the contrary in standardized oils no one can be aware of what's inside the container.

large packaging, consumers cannot protect virgin olive oil from its three enemies: humidity, heat, light. From a hygiene and safety aspect the branded standardized product has the guarantee: a) from the producing company, b) the distributing company, as well the state bodies (EFET) which control the agro-food chain. On the contrary, bulk olive oil and especially from rovings, has unkown and uncontrolled content. Moreover, the branded standardized olive oil is offered in a large variety of qualitative categories (PDO, PGI, biological, mono-varietal), from different companies (private, cooperatives, small and large) and through different channels (from Supermarkets to Internet), so it can finally fulfil the consumers' demands.	

Producer's 5 liter

The conclusion from the above juxtaposition that harasses Greek olive oil for decades, is the proposal for the **"Producer's 5 Liter".**

Namely:

1. The anonymous open (bulk) 16kg container is abolished/banned
2. The above container is substituted from a 5 liter tin which:

a) Has a safety and disposable cover

b) It is not necessary to be lithographed

c) All the data demanded from legislation are imprinted in a stick label

3. The production/packaging can be done:

a) The producer at home. This is the worst choice/solution since it has a high cost, big effort and doubtful results on quality terms,

b) The olive mill with a small filter and packaging line (filling, closing, labeling) that follows the separator. In general this is the best solution

4. Olive producer receives from olive mill the whole quantity (for self-consumption or distribution) in branded, legal, 5 liter and safe containers

5. Olive producer distributes the product with all the legal documents, which means th the State benefits from VAT received.

The expected benefits from the implementation of the "Producer's 5 liter":

1. Producer benefits from the additional difference from the low price he sells today, as well as from a significant part of the price paid by consumer

2. Olive mills (private or cooperative) will obtain an additional profitable activity

3. The standardization industry (private or cooperative) will stop having the unethical competition of the 16kg tin

4. Consumers will be protected, enjoying safe and branded products which, at the same time, will cover all the qualitative categories. They will able to choose whether to buy from a supermarket or a small producer or an olive mill or a producers' group

5. State will have the revenues from VAT

6. The sectors of equipment and services related to standardization/packaging will have an increase of their turnover

7. The Greek olive oil balance will gain the adulterated quantities which, nowadays, are distributed as "olive oil"

8. Even a part of the added value generated, if capitalized, can contribute to the extroversion of Greek olive oil in international markets

9. In favor of all the above derives from the comparison between countries. Spanish producer sells the olive fruit. The olive oil will be traded by his cooperative or the olive mill. Even his self-consumption oil will be received in sealed closed packaging. On the contrary, in Italy and Greece olive oil is traded by the producer himself [E.C.Europa.EU, 2012α]. Anyway, Italian producers never use anonymous 16kg containers but small branded packaging.

A6. Investing in a Table Olive Processing and Marketing Establishment

The existing table olive processing and marketing resources in the Prefectures of Epirus Regions under assessment include:

- One (1) organized industry, "large" in a local level but small-medium within the international competition

- Some very small vertical family establishments, no more than ten (10)

- As far as the olive producers are concerned, there are four (4) parallel categories:

a) Producers who sell the product fresh – green

b) Konservolia producers who wait for the natural blackening

c) Producers who put the product in salt for a first processing until they sell it later around Spring

d) Producers who make a second processing and packaging

- Finally, very important role plays one of the largest companies in the country, which has established a plant for the raw material collection in the plain of Arta. The raw material is then transferred to the firms' central offices in Larisa.

It would be really risky to conclude whether there is space for the establishment of a large processing and marketing establishment. It depends on several elements, mainly, as usual, the human factor, namely who will undertake such a venture, with which know-how for table olive, the capitals/funds available, channels of penetration in foreign markets etc.

What is really impressive is that the only industry in the territory:

- Uses raw material not the local Konservolia but the green olive of Chalkidiki

- All the packaging material are imported because Greek market does not meet its needs, since Greek products are exported to countries with high standards like Holland etc.

- For the same reasons Greek market is obliged to import even the materials used in the filled olives as for example white cheese instead of feta cheese, peppers etc.

A7. Establishment of Small Vertical Plants

First of all, for the reasons mentioned above, it is rather difficult to create neither new olive mills, nor a large olive oil standardization establishment or table olive processing/packaging. On the other hand though we distinguish a great deficit in processing-standardization-marketing of local products (olive oil and table olive). Obviously the prolongation of this situation means:

- Loss of income and jobs

- Further pressure on olive producers, abandonment or at least failing to attract new people.

The only alternative – even though questionable and problematic – seems to be the creation of small vertical olive oil or table olive plants. It is an approach totally different from some views, which in the name of "competitiveness" suggest the creation of 2-3 large plants of 100-150.000 tons in Crete and Peloponnese[14].

A.7.1 Olive Oil

The first issue an investment initiative has to assess is that of the olive mill. It is important to remind the olive mill's determinative role on the preservation of olive fruit's physical features, namely what we call "quality" (Petrakis, 2006). If an olive mill does not treat the fruit in the appropriate way, then the quality's downgrade can reach 30% (Koutsautakis, 2001).

[14] McKinsey Study: «Greece Ten Years Ahead»: Defining the New National Model of Growth». Available in: www.mckinsey.com/locations/athens/greeceexecutivesummary_newpdfs/executive_summary_english_new.pdf

A new investment has two options:

a) To mill in one or more existing olive mills.

The advantages are:

- The investment cost does not exist

The disadvantages are:

- There is no control of the procedure and the product

b) To buy a new or used "cottage" olive mill of two or three phases, capacity up to 700 kgs/hr.

The advantages/disadvantages are reversed to these mentioned above. Someone must have in mind that automations are limited, so the functioning requires knowledge and technical specialization. The investment cost could be limited to 150.000 €. The quality control is an important argument which could be reclaimed with the appropriate marketing.

Another very important element of an investment is a chemical laboratory for the basic analyses.

It is obvious that the combination of a small cottage olive mill with an elementary packaging plant and the necessary tanks requires a relatively high investment cost, between $10^{\alpha})0$ and 200 thousand Euros, which though has important advantages:

a) It is a totally vertical plant from olive grove till the final product

b) (A) means time and cost saving between production phases

c) Mainly (A) means quality control and satisfaction of the traceability requirement

d) (C) is the major marketing tool, since it leads to a high quality product of a specific origin.

A.7.2 Table Olive

From the economical aspect, many producers already act the first or the second processing as well as the product marketing. It is very important that infrastructures and know-how exist, elements that are usually difficult to find. Moreover, a table olive processing unit can be combined with a respective of olive oil, if raw material comes from the producers themselves and a marketing network, with synergies between the two products, can be planned.

A.7.3 Conclusions for the establishment of a small vertical plant

1. Raw material (olive fruit, olive oil, table olives) exist in abundance in the region and can adequately feed one or more units
2. The know-how exists, especially for table olives that requires accumulated experience and "art"
3. The benefits for the Region and local communities are multiple:
    a) Absorption of the local product, in higher prices of added value, hence olive producers stay in the region, young producers are attracted, with a simultaneous environmental upgrade and prevention of olive groves abandonment
    b) Jobs for specialized staff is required (agronomists, chemists, accountants) as well seasonal workers

c) Synergies with other sectors, such as constructions, trade, transports, tourism

4. The capital of an investment may exist or not. The total amount is not huge. National and international funding programs can be exploited

5. The most important factor though is human, the entrepreneurial body that will undertake the risk successfully.

Chapter 5: About Quality…

5.1 Quality Systems

The Certified (Accredited) Products' Systems

European Union has primarily adopted policies targeting products' protection and their quality. The goal is to give a competitive advantage so through it, the added value supports production, while at the same time will provide consumers with a choice for products of special specifications.

5.1.1. Products PDO / PGI

The first category refers to the fortification that the product is originated from a specific area. Consequently, it carries a "link" that connects the special product features with the area, the producers and the methods implemented. These are the so-called Protected Denomination Origin (PDO) and Protected Geographical Indication (PGI). They are ruled from Regulation 1151/2012. Greece has fortified a relatively large number, with 101 products, 29 of them are olive oils and 11 table olives. Unfortunately, what didn't become understandable from the beginning was that PDO/PGI fortification is mainly a marketing tool aiming to the products' higher added value. In general, the fortifications were made without a national development plan. The result was that only few of the products gained reputation and the name (brand name) that would lead to the pursued commercial outcome. For most of the products a PDO/PGI title is mainly (or/and exclusively) used as a passport for some additional subsidies like "qualitative retentate". Even today the discussion is about how many PDO/PGI products have been recorded and not if they sell in the markets.

In the Region of Epirus two fortifications have been made. Both of them are PGI and not PDO. The first one is "Konservolia Artas" (FEK 17/14.1.1994, MD 317713) and the second is the (virgin) olive oil "Preveza" (15/11/1993, MD 440329). The general rule of the inadequate commercial exploitation is applied in both products.

5.1.2. The Biological Products

These are the second most known and widespread category of certified products. The aim here is that the producer commits to environmental friendly cultivation methods by avoiding chemical inputs, so that consumers can buy products free from the residues of these inputs.

The biological cultivation has high cost and (usually) reduced quantity produced. For this reason EU predicts the counterbalance of the income loss through aids which, for olive, is between 4,14 and 7,56 Euros if this is an adjusting period or not (see also Reg. 834/2007 and 889/2008, to be replaced in 2016).

The biological olive cultivation proved to be very popular in Greece since, according to the latest available data, it covers 42,3% of the total biological cultivations.

Table 60 – Acres of Certified Subsidized Olive Cultivation (Greece, 2011)

	Transitional Stage	Biological Stage	Total
Table Olives	11.609	132.125	143.735
Olives for Olive Oil	45.819	329.814	375.634
Total Olive Cultivation	57.429	461.940	519.368

Πηγή: Ministry of Agricultural Development & Food –COSMOCERT SA

Unfortunately though, as in PDO/PGI products, the enhancement of the biological olive cultivation targeted mainly to the subsidy cashing, as mentioned above, and less to production. Moreover, it is worth mentioning that the existed certifications and statistics refer to acres and not to final product which is to be supplied in the market.

Another reason that producers' interest lagged was that consumers gradually stopped being inclined to pay extremely high prices, so the prices of the biological products dwindled compared to the conventional ones.

5.1.3. The Total Management

In this case the certification is given to the cultivation and not to the final product (as in biological agriculture). The olive producer cultivates under the guidance of the supervising agronomist. The aim is the recording of the Good Agricultural Practices, the minimization of chemical inputs use for the environment protection and producers and consumers' health. In essence, it is the right conventional agriculture with the harmonic relationship between producer and agronomist, according to the prototypes of the agricultural extension. Under normal circumstances the Total Management leads to production improvement (better yield and qualities), reduction of inputs, hence an increased income for the producer. On the other hand, TM can become the platform of a stable relationship with the customer (wholesale, industry) who is interested to know the exact terms of production. This is why big Super Markets have established Total Management Systems imposing them to producers-suppliers.

Unfortunately, even if Total Management would have been exploited and become the dominated cultivation method, the ample subsidy programs without the requisite controls, lead to the impression that this is another "passport" for program and subsidy cashing.

In Greece the Total Management is certified through the AGRO2 model, while EU has avoided, so far, to commit itself leaving space for national initiatives.

5.1.4. Environmental Standards

Nowadays there is a series of private certification systems of the environmenta
repercussions from a products' production (for example the "Climatic Neutral"). They

functioning in several ways, as by calculating the aggravation, in CO_2 equivalent, caused by a products' productive chain till the final consumer. Thus, for example, for an olive oil consumed in US, the whole cycle should be calculated: from the olive tree's fertilizers until the bottle and the fuels of the ship carried the olive oil in the States, namely every single detail. A company that voluntarily commits itself to such a system should pay in a global cashier an amount proportional to the climatic aggravation its product causes. This way the company has the right to quote the fact in its label and this can become a marketing tool addressing to consumers sensitized to environments' protection.

5.1.5. Standards and Rules of a Plant Processing Food

For a food establishment (olive mill, olive oil standardization, olive processing) a series of quality standards are applied obligatory or voluntarily.

5.1.5.1. HACCP, ISO 22000:2005

This is an international standard which is applied obligatory in food enterprises according to the Community Guide 93/43/EU and the Greek MD 487/4.10.2000. Through HACCP – Hazard Analysis and Critical Control Points, a food enterprise, regardless of its size and work complexity, can prove that it is in a position to control all the hazards related to food safety and hygiene.

5.1.5.2. The importance of Traceability

Quality is related to traceability which is defined as the monitoring and recording of all stages of the agro-food stage, from the olive grove (protogenic product) till the final product that reaches the consumer. The system applies the rule n-1/n+1 where for every stage n we should know everything related to the previous n-1 and the next n+1.

The application of traceability is obligatory since 1/1/2005 according to article 18 of the regulation (EC) 178/2002. Its importance is multiple:

a) Especially for safety reasons in case of nutritional crises where it can trace the point and the causes of the problem

b) Additionally through traceability we specify product's origin while in case of fraud we can trace the responsible, in which specific stage he interfered. This is why traceability become legally obligatory (Peri, 2014)

c) For a food company, firstly it is a tool for improving products' quality and secondly it is necessary for the withdrawal of certain lots when a fault appears.

For the implementation of traceability in food and animal food sector the international standard ISO 22000:2007 is applied.

Traceability combined with a total of requirements for quality can be implemented betwe companies (cooperatives) even in interstate level (Greece-Italy) (Spiridou, 2011).

5.1.5.3. Methods of Internal Self-Control

Apart from all the compulsory rules and certification standards, for every food company the voluntary internal self-control of the production procedure is a very important tool. The system can be established and controlled by the professional companies' liaison as successfully implemented in Spain (Moya, 2011 and Peri, 2014).

Chapter 6: Trade and Marketing

In this chapter we will examine two of the issues that worry those who produce in order to sell the product and not just for pleasure and self-consumption.

Part A: The Commercial Flows

A1. Olive Oil

The Greek reality composes a complex and chaotic image, since in olive oil marketing and distribution are involved:

- Olive Cultivators / Producers
- Cooperatives
- Private Agents and Traders
- Roving Distributors

If we exclude the latter, someone could say that this is a natural situation. The problem is that the relations of the above are not stable but change and overlap. Thus:

1) The olive producer is not limited in the production and selling of the olive fruit (as in Spain) but owns the olive oil produced in the olive mill. The producer relationship with the mill is not stable, cause very often he addresses to more than one or change among them
2) Since the producer owns the olive oil he becomes the seller as well
3) Another side effect of the above is the downgrade of the quality from all these aimless oil transports which is usually made with means completely inappropriate (plastic containers, pipes, pumps)

4) The next link are the cooperatives (first grade and Unions). In this case, there still exist multiple roles, since some cooperatives have their own mills and some don't, some standardize their products in small branded packaging and some don't and finally some trade their product in bulk (to Italy and Spain or to private industries). Another source of complexity is the fact that relationships between first and second grade Unions are not stable and change from Prefecture to Prefecture and from year to year

5) The most difficult part, which actually is the main reason of the cooperatives' sickliness, are the relationships with the Producers – Members, who are not obliged either to grind their olives in the cooperative olive-mill or to deliver a constant quality and quantity. This way the cooperatives cannot plan or negotiate.

6) The olive-mill's role is the key for distribution and for quality as well (Zabounis, 2001, Koutsaftakis, 2001, Petrakis 2006, Peri, 2014). We have already highlighted the extremely large number of olive-mills. Most of them function in a very small scale, hence with an uneconomically high cost. The common constant milling face the wrong produce[illegible] mentality but olive mills do not put any effort in it. Another important point of confus[illegible]

that some olive mills have set their compensation as a percentage of the olive oil produced and some in money as a proportion of the olive fruit quantity. But yields and olive oil prices present high fluctuations and this diversity of form is difficult to be explained and justified

7) Olive mills' role has expanded their activities in marketing. Many olive mills (most of them in areas close to cities) sell the 16kg tins. A significant number has been involved in trading of olive oil in bulk to agents, traders (Italians / Spanish – Greek Industry)

A2. Table Olives

The table olive sector is much more complicated for three reasons:

a) The product is diffused from too many places, since the 2.000 production points of olive oil do not exist.

b) Every producer trades his product id three different stages. Either fresh or after the first or second processing. Additionally, the number of agents is much more bigger compared to olive oil and usually their activities and representation is not clear

c) The product is classified in a series of different varieties and means of processing.

Part B: National Peculiarities

Which model is chosen by the three olive producing EU countries? It is worth mentioning that in Greece and Italy producers keep their olive oil while in Spain it is delivered in his cooperative (E.C. Europa.EU., 2012α).

	Olive Production Characteristics	Olive Mills & Processing Characteristics	Olive Oil Characteristics	Competitiveness Advantages	Competitiveness Disadvantages
Spain	-Semi-mechanized traditional olive groves - Many large scale intensive olive groves with high density planting	- Belong to Cooperatives - Of large scale and economical yield	- 35% is extra virgin olive oil - Big gamut of extra olive oils and of lower quality as well	- The production size and market power - Low cost -Governmental Supporting Programs	- Dependence on sells in bulk -Lack of marketing and product differentiation
Italy	-Small olive groves with traditional planting density -Harvesting by hands	-Large number of small olive mills -Mixed image between traditional and modern -Crossroad for	-Mostly extra virgin olive oil -Great variety in qualities, categories, organoleptic features	-Famous for high quality -Recognition of the Italian Brands - Governmental Supporting Programs	-High Production Cost -Divided Production Chain

		olive oil mixing and standardization from all countries			
Greece	-Small olive groves with traditional planting density -Harvesting by hands	-Large number of small olive mills -Few standardizers	-Mostly extra virgin olive oil with intense savory/scented characteristics	-High quality - Governmental Supporting Programs	- High Production Cost –Poor marketing infrastructure - Dependence on sells in bulk

Italy

Italy shows a deficit in olive oil market. Imports (relatively) cheap, sells expensive and finally gains! Italy's imports are approximately 500-550 thousand tons originated from Spain, Tunisia and third countries, as Greece. The average import price is 2,0 Euros/kg and the average exporting price is 3,0-3,5 Euros/kg respectively. Hence, Italy profits from this difference.

Imports come mainly from Spain (360 thousand tons) due to the increased Spanish production and the acquisition of four Italian Brands (Bertolli, Carapelli, Sasso, Minerva) from Spanish. From third countries, especially from Tunisia, Italy exploits the status of reduced duties as well as the "Energetic Perfection" (TRA)[27].

The key for this profitable model of Italy is the added value achieved by industry since it imports cheap olive oil in bulk and exports expensive standardized. From a marketing aspect the strongest weapon is the Italian Cuisine, the good image of the Italian restaurants all over the world and the exploitation of the tourism (for example: Tuscany).

Spain

Spain basically started when entered EU in 1986 with a small production (around 500 thousand tons) and serious infrastructure problems. In less than thirty years Spain displaced Italy from the first place. Today, Spain controls market and prices by producing huge quantities of olive oil (more than 1,6 million tons). Spanish exports in branded olive oils overcame the Italian ones while they bought out the marketing milestones of the Italian industry. Spain's success was based on:

a) The virtuous management and the appropriate exploitation of EU funds that were invested in infrastructure

b) The good cooperation and organization of every factor, namely:

[27] A company imports from a third country without any duties with the obligation to re-export equivalent quantities (from the same or other quantitative category), after having it packaged or/and processed

- The producers and their powerful cooperatives
- The industry with cheap product and aggressive promotion

- The large internal market
- The scientific research through Universities and special centers
- The Banks
- The bodies of the Local Administration which are particularly powerful in a Region level
- The Central Government and the Ministers of Agriculture who supported olive oil because it was a basic product for the country.

Greece

"Inability to convert the quantitative superiority in financial profit" (Zabounis, 2001).

The last decades Greece was based on the solution of the bulk olive oil in internal market (16kg tins) as well as in exports (in Italy). Additionally to the inflow of huge EU aids that were not exploited in favor of the product. The cooperatives failed to capitalize the full financial and political support they had for many years. Additionally, Greece did not exploit tourism, the real Greek Cuisine and Mediterranean nutrition (Trichopoulou, 2011 and 2012). Finally, failed and still fails, any communication and cooperation within sectors and between them. All this happens when officially USA recognizes that Greek extra virgin olive oil is (justifiably) expensive and characterized by its high quality. USA imports 300.000 tons per year from which only 3-4.000 tons come from Greece.

Part C: A Note for Marketing

After many years dedicated to packaging in bulk and subsidies, a new generation that searches out new channels has occurred. Initiatives with common characteristics:

- To create high standards product, almost exclusively olive oil and not table olives
- Emphasis in packaging, design and branding (and relevant international terms of marketing) and not on the content
- Priority in exports and secondly in internal market
- Confidence that sells can develop electronically (through internet) and not with the traditional means (representatives etc)
- Finally, setting of very high product selling price

The coexistence of all the above composes what we call “syndrome f”, without excluding some of these efforts to succeed. In general, it seems that a new “fashion” is creating.
Since olive and olive oil, especially in our country, are ancient products, they demand knowledge and respect from the beginning of their production till the end of their selling. They cannot be sold in terms of marketing of a consumer good. This is why we sum up some specific points:

- Olive oil is not food
- The priority is on the product and the content
- A beautiful, attractive packaging is needed but is not enough. The relation packaging cost/product should be reasonable
- The cooperation is useful, no one can achieve everything by his own
- Do not start with unnecessary extravagances and costs
- The knowledge of the quality’s parameters and their constant control are decisive
- The producer/standardizer should educate and persuade consumers for olive oil’s quality
- The prospective customers should taste and not just see the product
- The table olive has huge interest, like the internal market.

Chapter 7: Conclusions

Part A: Conclusions Per Chapter

Chapter 1. Olive Producing in Greece and the World

1. Just because Epirus is placed among the more disadvantageous (geographically, economically) Regions, it needs every additional production unit which is valuable for the development or at least for the non-deterioration of the current socio-economic structure. Reasonably, every source disposal and investment in Epirus will have multiple profit compared to other less disadvantageous areas of the country

2. Epirus is the Region with the higher participation of primary sector. The question is if the general economic/regional/agricultural policy should support this agricultural (primary) sector or to discourage him

3. Epirus is one of the Regions with the lower participation to the Greek olive production

4. For Greece, olive and olive oil are an ancient case and a huge cultural, nutritional, economic, social and environmental value. Unfortunately, (especially for olive oil) **this wealth remains unexploited. It is impossible to convert the quantitative superiority in financial profit.** This fact is imprinted in producer prices' evolution, compared to the respective in Spain and Italy.

5. Table olive is, essentially, a different product from olive oil and this is how it should be treated. In Greece the tale olive sector even though it is not in an ideal situation, for several reasons does not face the serious problems of the olive oil sector

6. The global olive oil market is characterized from the enormous increase of production, basically (but not only) due to Spain. On the other hand, consumption exploiting the dissemination of olive oil's beneficial consequences in health follows the same trend but in great difficulties. This supply and demand balance results to producer's price freeze

7. The development of Spain which gained the global leadership has been decisive. Greece's position in international trade is disappointing and confirms point 4

8. The global market confirms that table olive is not identical to olive oil and presents a better balance between production and consumption. Additionally the export structure has a better allocation compared to olive oil

9. It should be noted that the statistical data available (in Greek and international level) are not identical to the objective market estimations. This happens mainly for olive oil. The prices for example can increase immensely, while the supply-demand index is announced to be balanced

Chapter 2. Viability of an Olive Cultivation

10. The holding is small and multi shared which actually happens all over Greece. This is due to many reasons, socio-historic, family law, the fact that the majority of olive producers have another profession.

11. The spread of Konservolia, especially in semi-mountainous areas, is very important for environmental and socio-economic reasons. Kalamon variety is expanding with new plantings, mainly in lowland and irrigated areas. In the plains of Preveza and Thesprotia olive oil varieties prevail, primarily Lianolia of Corfu and secondarily Koroneiiki.

12. Someone can observe that the spread of agriculture systems as biological or total management is very limited. The question is why they are not developed

13. Very big divergences between farms or even parcels occur in productive data as well as in cost. It is confirmed that the basic cost source is harvesting and then pruning

14. As already known, Kalamon has higher cost than Konservolia. But since it has a higher selling price, it finally brings the producer a higher net financial result

15. Olive oil has a very high cost especially when it comes from table olive varieties and has small oil yields. Additionally, the plain of Arta presents a higher milling cost. For the olive producer though the high cost is covered from the high selling price directly to consumers

Chapter 3. The Common Agricultural Policy Framework

16. Waiting for the national decisions for the new CAP 2015-2020, Epirus can anticipate an improvement of its relative position between the Regions in Greece. On the contrary, the olive cultivation will probably face a deterioration of its position

17. Since 1981, when Greece entered EOC, had the luck to enjoy a mine of funding especially in olive oil sector (17,4 billion till 2006, only as direct aid without structural programs). This happened because Greece “inherited” the favorable status granted to Italy since 1996. Unfortunately this huge amount of money not only was not exploited and finally spent, but in many cases someone can admit that it damaged since it lead to the neglect of the productive activity as well as to unethical competition between enterprises. On the contrary, for Spain these communal funds became a basic component of the big progress achieved.

Chapter 4. The Legal and Socio-technical Framework of an Investment

18. The cultivation of land is still a very complex and difficult reality

19. With the existing data there is no need and seem no viable a new big investment – olive mill, olive oil standardization, table olive processing. On the contrary, what seems to be viable is the establishment of very small vertical plants for olive oil or/and table olive

20. It is absolutely necessary to stop the distribution of the bulk 16kg no-name tin. The solution of the branded “Producer’s 5 liter” is simple and feasible.

Chapter 5. The Organizational Framework

21. No progress can be achieved if the producers don't understand, persuaded and move to the re-establishment of their own collective organization forms which can adopt different legal shapes.

Chapter 6. The Unnegotiable Bet of Quality

22. Since olive oil and table olive are naturally functional food of a high nutritional value, the first goal of the whole production and processing procedure is to safeguard the natural features of these products

23. Quality is a notion objective and measurable. Hence, the very common statement "my olive oil/table olive is the best in the world" is dangerously groundless

24. Studies in US have recorded that the average Greek olive oil is qualitatively superior of the Spanish and the Italian one. The specific studies refer to the **average** and not to every olive oil. Another ascertainment is that this quality is not exploited

25. One of the most critical parameters – objectively measurable as well – is the organoleptic evaluation (panel test) instead of the reactions it has caused

26. There is a series of voluntary standards and quality systems, each one with a different philosophy and targeting: PDO/PGI products, biological products, total management , environmental standards. Additionally, there are mandatory standards such as HACCP (ISO 22000:2005) and traceability 9ISO 22000:2007)

Chapter 7. Trade and Marketing

27. The current situation of the commercial flows is slightly chaotic. Spain and Italy follow two different models. History has proved that the Spanish model is the winner. The big question for Greece if it has a model to follow.

Chapter 8: Recommendations

Part A: Recommendations Per Chapter

Chapter 1. Olive Producing in Greece and the World

1. Epirus is entitled to have priority in the allocated funds, these from the CAP included
2. The primary agricultural sector of Epirus mustn't be shrunk but on the contrary should at least preserved, exploiting the advantages in natural and human resources
3. It is worth studying the development margins of Epirus olive sector in the framework of a differentiation for local products
4. Table olive must be differentiated from olive oil and develop independently
5. The recovery of producer prices cannot be done with "administrative measures". The most crucial point is the increase of consumption in order to surpass supply which, anyway, increases internationally
6. Since the Greek olive oil sector has so many common points with the Italian, the two countries should develop closer relationship
7. The international market as well as the potential of the Greek market offer significant possibilities for the Greek table olive
8. It is an urgent need to redeem the completeness and credibility of statistical data. In local, national (Greek) and international level. It is not fortuitous that the best statistics come from Spain through the cooperation of cooperatives – enterprises – organizations – local administration – Ministry of Agriculture. You cannot have effective policy without reliable statistics

Chapter 2. Viability of an Olive Cultivation

9. It is very difficult for someone to be optimistic enough to hope for structural – statutory interventions that would gradually lead to a solution. Given the current data the only data answer is the joint organization (cooperative) of small producers and their dotted farms
10. The environmental value of Konservolia should compose the basic argument for its support through financed and co-financed national/communal programs. Every expansion policy with new planting, varieties' choice and substitution, planting methods (for example traditional or hyper-densed) should be made with high caution and expertise, having in mind all the parameters (soil, climatic, agronomic, economic, commercial). The producer should not be left alone without the advice of special experts, who, though, must be based in specific knowledge and analysis and not in dogmatic theories
11. The reasons for which the Biological and Integrated Management have not been developed should be traced. The Agriculture of Accuracy is a modern solution that can be combined with the environment protection methods, reducing as well the cultivation cost
12. It is worth studying the great differences in productive and cost data among farms and parcels, in order to extract some conclusions which, possibly, will become the examples either for imitation or avoidance
13. The agronomic and economic yields among the olive varieties should be examined

14. Since olive mill constitutes an important cost element, the method of continuous common milling reduces the operation cost but it also ameliorates quality
15. Since it is very difficult for the producer to choose between fresh (raw) or processed product and whether he sells Konservolia green or wait for the natural maturing, it is important to be supported by experts in subjects like cultivation, processing, pricing
16. The effort must be focused on the improvement of the cultivation techniques (Total Management, Agriculture of Accuracy) in order to mitigate the alternate bearing phenomenon and to increase the quantitative yields
17. The relatively limited cost variances between the professional and non-professional producers constitute an important finding to create a wider olive policy
18. Facing the fact of the decreasing trend of the producers' income (as well as the prices), Spain follows its own strategy (increase of the production, cost reduction, markets conquest) and Italy as well (exploitation of the country's image, its cuisine and its olive oil in order to maximize the selling price). The question is: Which exactly is the Greek Olive Strategy?

Chapter 3. The Common Agriculture Policy (CAP) Framework

19. A great effort should be put on the producers' information
20. All the stakeholders, producers/cooperatives/enterprises and bodies/Local Administration/Members of the Parliament and Ministers, must decide on how they will handle the new CAP, even though its funds are reduced. They have to decide if CAP will continue to be "consumption for today" or it will become an investment for the future.
Since CAP's quantitative criteria belong to the future, the interest is now focused on the products' qualitative features, their promotion and the relevant aids. Hence, transparency, evaluation and monitoring are elementary prerequisites if we want to manage, in the appropriate way the smaller amount available.

Chapter 4. The Legal and Economic-Technical Framework of an Investment

21. The decision for an establishment in countryside should be checked in advance very carefully in every parameter and without any "illusions". A subject that has not yet been examined is the role of the economic immigrants. Those who have not returned back to their countries, created families and have been transformed to owners by renting or buying olive groves

22. It should be seriously examined the possibility to establish (very) small vertical units from the producers till the next steps of processing and marketing. The economic self-reliance (without bank loans) should be assured, as well as the production of a minimum marketable, critical product quantity of a very high and certifiable quality, the support of the necessary scientists, technicians and finally the marketing of the product sufficiently profitable prices

23. No expensive investments are required for the suggested "Producer's branded 5-liter". These are steps that have to be made in advance from all the olive mills of the reg as well as from every small vertical unit.

Chapter 5. The Organizational Framework

24. The formation of collective schemes, as described in Chapter 5, is the first and necessary prerequisite. It is really essential and not accidental the fact that in Spain 70% of the producers is organized in successful cooperatives. In Greece, similar efforts in the past showed that the "Big Schemes" are not easily handled because they do not "fit" to the psychology and the reality of the small producers. It is necessary to ensure the substantial preconditions and the easiest way is the adoption of one of the legal schemes: Cooperative (Law 4015/2011), Producers Groups, which by the way will have a favorable treatment, limited liability company and finally Social Cooperative Enterprises (Κοιν.Σ.Επ.) which is a relatively new and very interesting legal form.
The most important issue is the human relations and everybody's self-commitment to the rules for the product delivering to the Cooperative (qualities and quantities).
It has to be made very clear that we are referring to financial enterprises of a social interest. Therefore, they must have positive economic results, while the profit will be distributed to all the members and the wider – local – society.

Chapter 6. The "Bet" of Quality

25. This "quality" should be imprinted, become objective and be supported in all steps. Till now Greece sells the highest quality in very low prices, while at the same time it is impossible to make this economic superiority to trading profit
26. The adoption of these prototypes should be genuine and not virtual. They are the "passport" and the prerequisite for a producer to deal with the competition. These quality systems usually have a high cost, that is why, in most cases, are financed from EU programs.
27. The subject of the strict qualitative limits (prototypes) of the extra virgin olive oil in Greece is, so far a "taboo". It has to be very clear that:
a) Since we already have – in average – the highest quality then this is on our favor. There are still many risks, a lot of work has to be done, some will lose, but the overall profit for the producers (higher prices) and the standardizers as well (expansion to international market) is certain
b) The adoption and imposition of these prototypes should also be considered as certain.

Chapter 7. Trading and Marketing

28. The Greek olive production (mainly olive oil) is losing its market share from the international competition. This is due to many reasons. One of the them is that we never organized a conversation for what we call "National Products". Which are the targets, the priorities, the necessary means, the expectations. Who and how. It is obvious that the Central Government (Ministry of Agriculture) has failed to organize such a conversation.
Therefore, in a local level and without expecting solutions from "above" the producers have to search out and implement the best possible solutions, which can become the example for the rest. Our moto should be **"think globally, act locally"**.
Having ensured that in a local level satisfactory quantity is produced of a good quality from reliable enterprises, the final – and most crucial – question is where and how a producer sells his production. The present study cannot offer no more than some suggestions even if they do not – and cannot – cover the whole subject:

a) **The two registered PGO olive products: Preveza's olive oil and Arta's table oil (Konservolia). The have to be exploited.** The most important issue is that the producers as well as the local society must recognize the two products as an element of their identity that make them proud, like the historic monuments of the areas or the sports teams. They should not be considered as a tool for micro-subsidies

b) **The Nutritional Heritage.** There is a huge wealth of local recipes which exploit the locally produced ingredients

c) All these **Quality Prototypes,** previously mentioned, can and must become product differentiation elements in order to assert the corresponding market share

d) **Local Societies, urban centers** relatively close, should be the first consumers to who an enterprise will address. A good idea is to create synergies with other local products (for example stock raising)

e) **Tourism** is the first - and the easiest – way out. The food shops (hotels, restaurants, coffee shops, HO.RE.CA.) can probably absorb the whole local production. This can be achieved through tourists' consumption during their stay or through their purchases when departing. This is why packaging is very important. In every Spanish bar customer receives a small plate with olives right after sitting. Spain, Italy and Portugal have imposed what Greek Ministers for unknown reasons deny. In every food shop, olive oil should be placed in small "branded" packages (bottles)

f) All the above actions can be coordinated and promoted through the "Local Products' Basket" deriving from the Law 4015/2011.

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