EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR AGRICULTURE AND RURAL DEVELOPMENT

Directorate G. Economic analyses and evaluation
G.3. Analysis of the situation of agricultural holdings

Brussels, 21 December 2006
D(2006)

INCOME EVOLUTION 1990 – 2003 AND 2013 FORECASTS

BY TYPE OF FARM BASED ON FADN DATA

1. SUMMARY REPORT

This chapter aims to study the income evolution between 1990 and 2003 in the EU15 at microeconomic level according to three different dimensions: Member State, Type of Farm and Economic Size. In addition, the income in 2013 is forecasted taking into account agricultural policy, prices and yields evolution but keeping the structures and the type of products of 2003.

The main following conclusions can be drawn after the analysis:

- Farmer's income level depends more on the country than on the type of farm.

- The income distribution is very large in the EU15: in 2003, half of the farmers had a farm net value added between 0 and 15 000 € per annual work unit and a quarter had more than 25 000 €.

- In average the European income per annual work unit increased by 28% in real terms from 1990 to 2003. But for a few types of farms and a few countries the income decreased on the period.

- The income per annual work unit increased because of:

  - The decreased number of farms,
  - The enlargement of the remaining ones,
  - The increased labour productivity,
  - The increase of the direct payments.

- But on the same period the income per hectare and per livestock unit decreased.

- In 2013, an 11% decrease of the income per farm in real terms is foreseen if structures remain still. An increase of the income per annual work unit will be possible only with a new decrease in the number of farms and a continuous improvement of labour productivity.

2. METHODOLOGY

The estimation of the income evolution at farm level is based on data obtained through the FADN network. These data represent only farms that can be considered as commercial or professional farms. Around 3 million holdings in the EU-15 are considered to fall in this group.

As indicator the Farm Net Value Added by Annual Work Unit (FNVA/AWU) is chosen.

Farm Net Value Added is defined as follows:

FNVA = Output + Subsidies – Intermediate consumption – Depreciation

In this indicator, the external factors (wages, rent and interests) are not deducted.

All financial data are expressed in year 2000 prices.

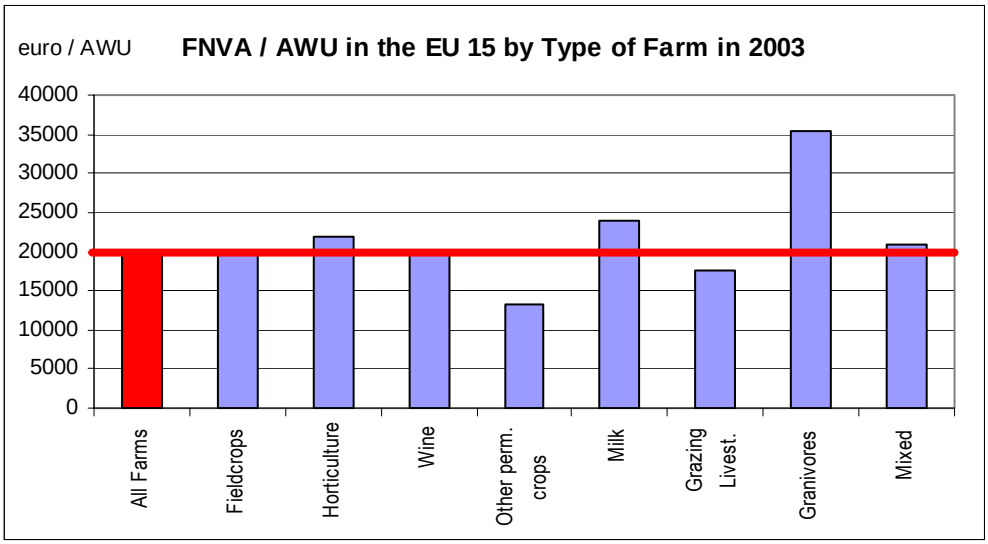
The FADN sample included East Germany only from 1995. In the following study, the data for EU12 take only the Federal Republic of Germany (FRG) into account. EU15 data however includes the ex-DDR.

The comparisons are done by Member State and Type of Farm. In Annex 1 the distribution of farms according to these criteria can be consulted.

3. 2003 SITUATION

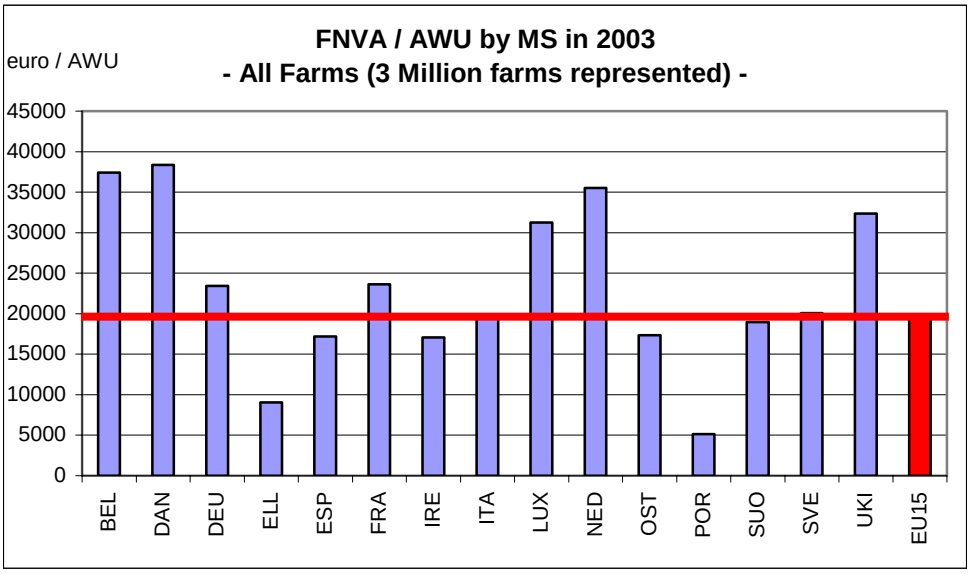
3.1. FNVA/AWU by Type of farm and Member State

In 2003, the average income in the EU 15 was around 20 000 €/AWU. However, there are considerable differences between the different Member States and types of farm.



Fieldcrops specialists, who represent 31% of the farms in the EU, had a slightly higher income (+3%) than the European average, and mixed crops and livestock farms too (+7%). Wine producers were also close to the average, whereas other permanent crops producers (olive oil, stone fruits, citrus…) had an income 33% lower than the average. The income of beef and sheep producers is 11% below the EU average.

This is in sharp contrast with horticulture, milk and granivores specialists. These had an income well above the average (+ 11%, + 21% and + 80% respectively).



More important differences can be found between the average incomes of the agricultural holdings in the different Member States. Three groups of Member States can be distinguished:

- "High income countries", are characterised by large structures, high productivity and a developed granivores and milk production. This group is composed of Denmark, Belgium, the Netherlands, Luxembourg and the UK.

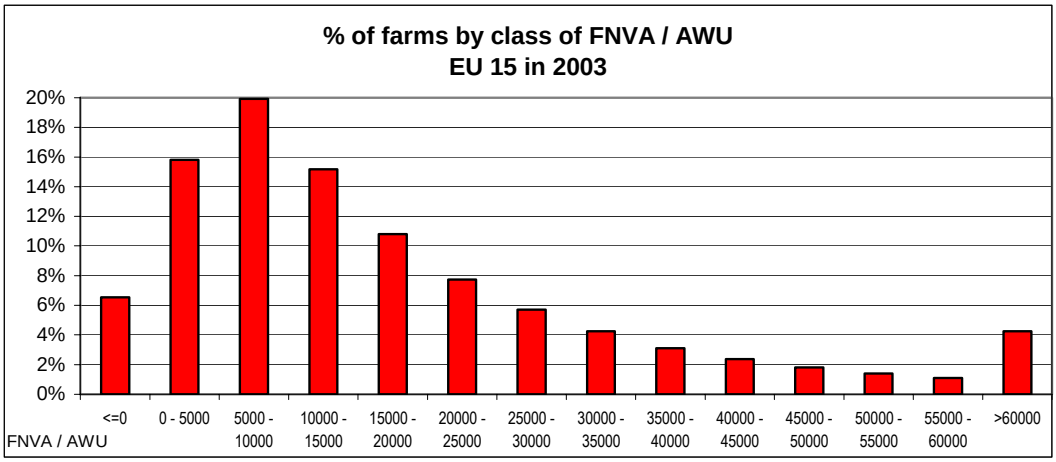
- "Average income countries", have medium structures, and an agricultural sector mainly based on fieldcrops, dairy and grazing livestock. This group includes: Germany, France, Italy, Sweden, Finland, Austria, Spain and Ireland.

- "Low income countries" typically have small farms with Mediterranean productions: Greece and Portugal.

The income by Member State for each type of farm can be found in Annex 2.

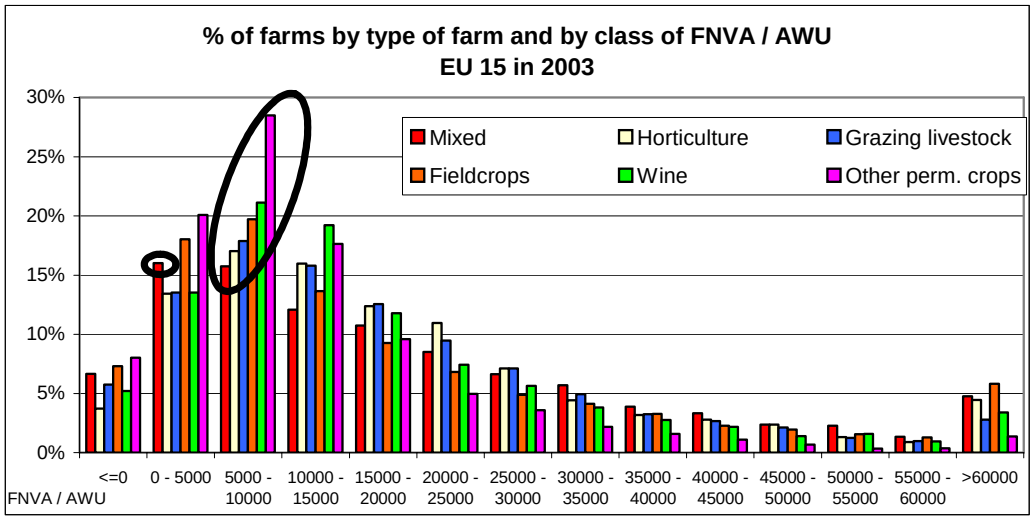
3.2. Income dispersion

3.2.1. In the EU 15

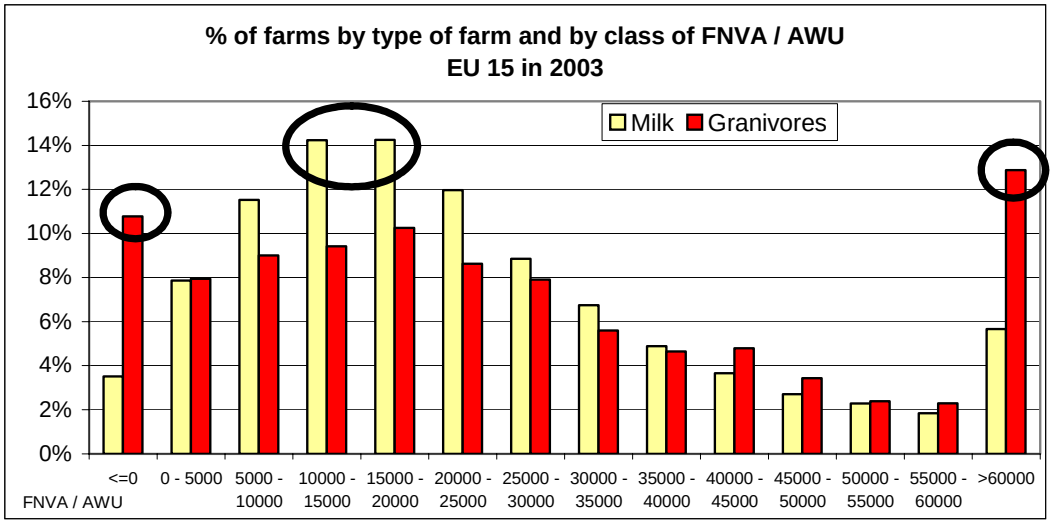


In the EU, the most common class of income (20% of the farms) is 5 000 - 10 000 €/AWU. Half of the farms belong to the classes 0 – 15 000 €/AWU and 24% of the farms have a FNVA/AWU above 25 000 €.

3.2.2. By type of farm



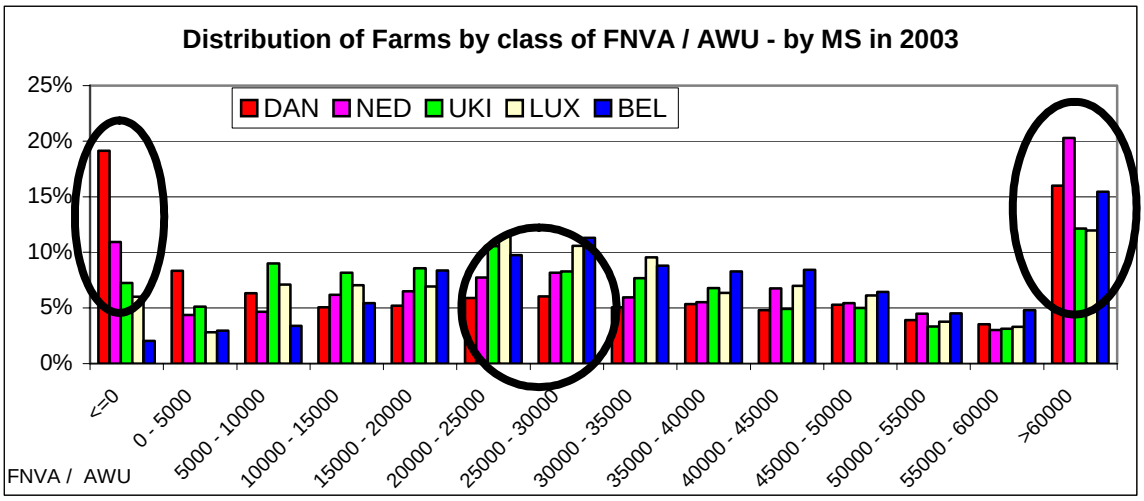
Many of the farm types follow the same distribution. A majority of farms specialised in fieldcrops, horticulture, wine, grazing livestock and other permanent crops have an income between 5 000 and 10 000 €/AWU. For mixed crops and livestock farms, the same share of farmers (16%) have an income between 0 and 5 000 €/AWU and between 5 000 € and 10 000 €/AWU.



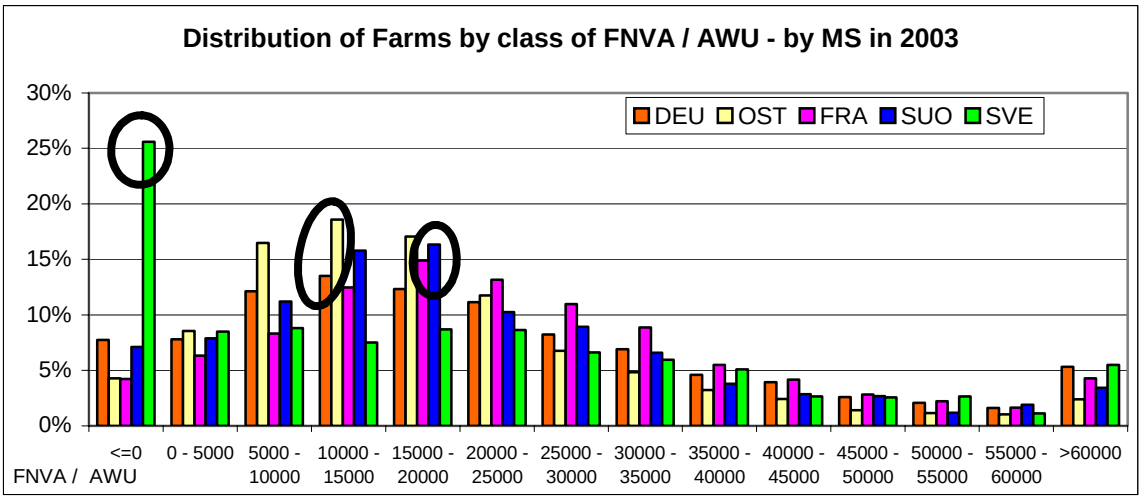
Milk specialists have a higher income: 28% of the farms have an income between 10 000 and 20 000 €/AWU.

For granivores specialists however the distribution is completely different. The income distribution is characterised by both a high share of farms with a negative income in 2003 and an important group of producers with a very high income. 13% of farms had a FNVA / AWU above 60 000 €/AWU, while 11% of the farms had a negative FNVA / AWU.

3.2.3. By Member States

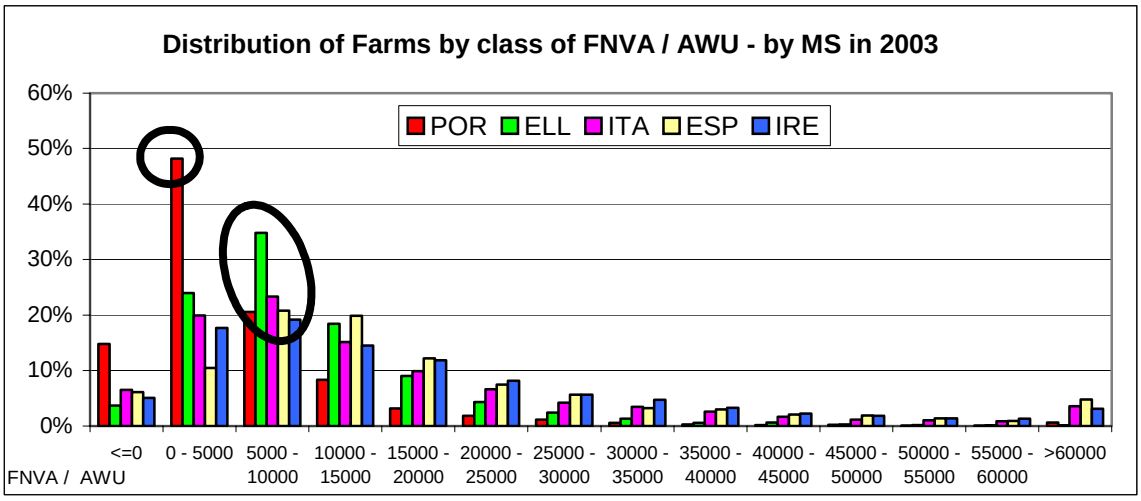


The group defined previously as the "high income countries" (Denmark, the Netherlands, Belgium, Luxembourg and the UK) has a profile very much influenced by granivores production (numerous farms with negative or very high income) and milk. Moreover, more than half of the farms have a FNVA / AWU above 25 000 €/AWU.



Another group of countries more specialised in fieldcrops, milk production and grazing livestock can be distinguished because the highest share of the farms belongs to a relatively high income class (10 000 to 15 000 €/AWU in Germany and Austria, 15 000 to 20 000 €/AWU in France and Finland).

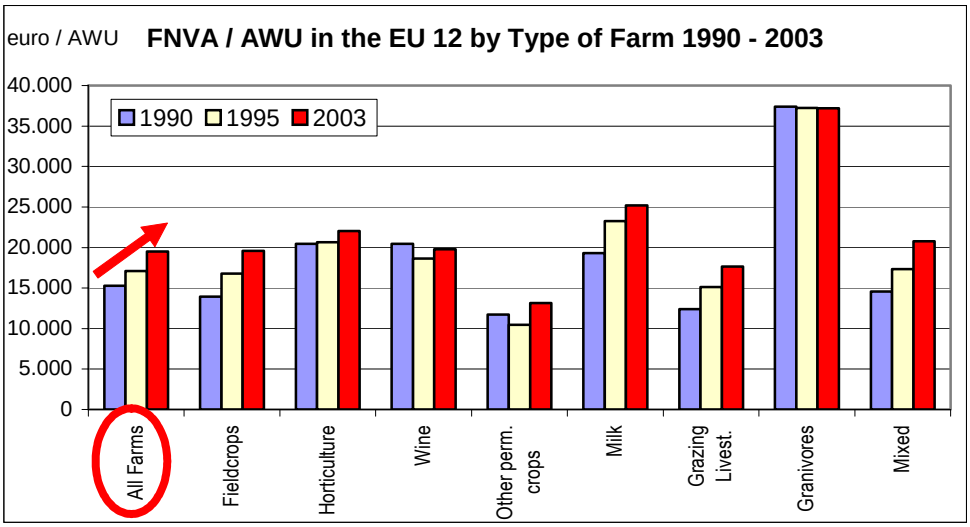
In Sweden many farms have a negative income. Those farms have a bad profitability, especially in the pig sector but often the loss in agriculture is compensated by a gain in the other activities on the holding (for instance forestry) which is not included in the FADN.



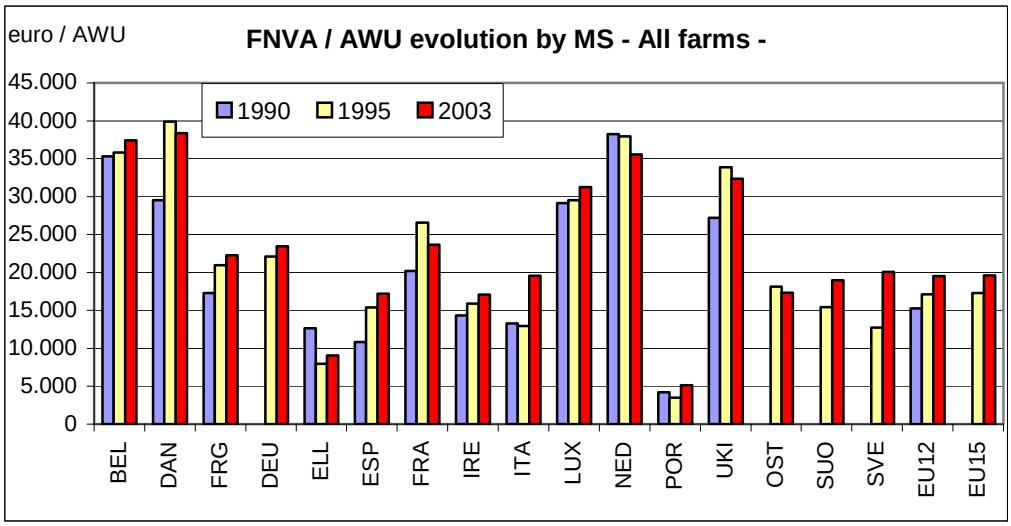
The Mediterranean countries and Ireland have a similar pattern of income distribution. In Portugal, almost 50% of the farmers have a FNVA / AWU included between 0 and 5 000 €/AWU. In Italy, Spain and Ireland around 20% of the farmers have an income between 5 000 and 10 000 €/AWU. In Greece 35% of farms fall in this category. Moreover less than a quarter of the farms have an income above 25 000 €/AWU (from 3% in Portugal to 24% in Ireland).

4. INCOME EVOLUTION 1990 – 2003

4.1. Evolution by type of farm and Member State



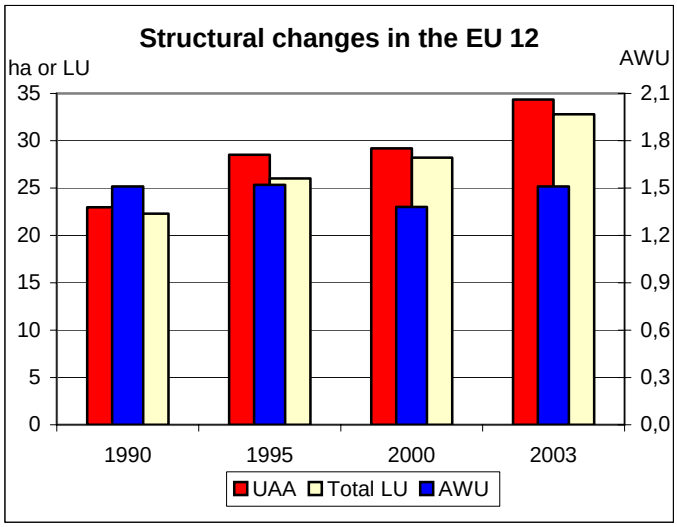
During the 1990 – 2003 period, the EU 12 average income increased from 15 300 €/AWU to 19 500 €/AWU (+28%). For all type of farms except wine and granivores specialists the FNVA/AWU increased (from +8% for horticulture to +43% for mixed farms). The complete evolution over the years is available in Annex 3.



However, between 1990 and 2003, the income (in real terms) decreased in Greece (-28%) and the Netherlands (-7%) and it decreased between 1995 and 2003 in France, Denmark, the Netherlands, the UK and Austria.

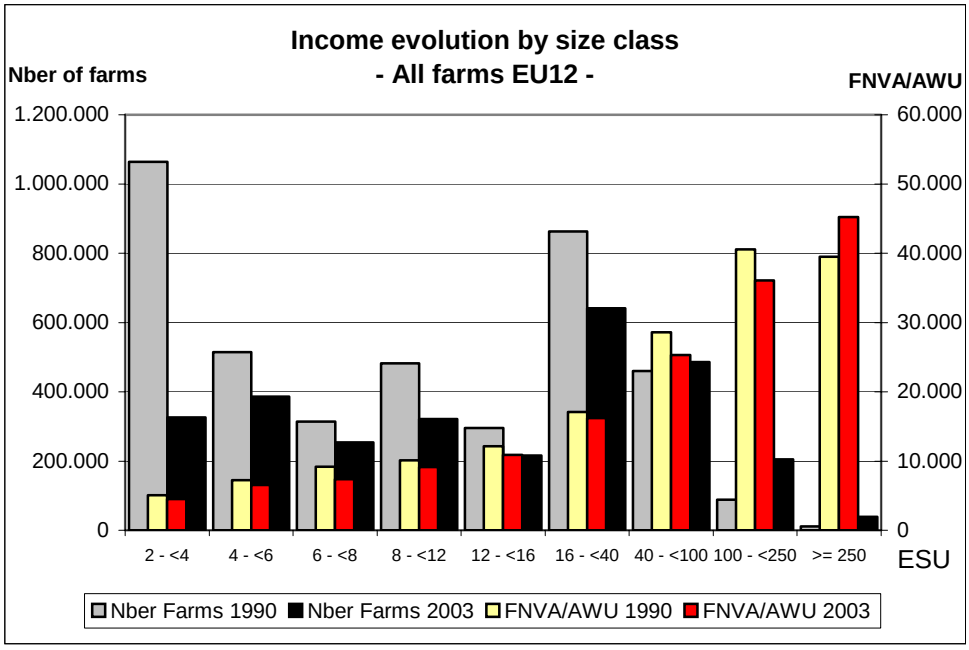
4.2. Explanatory factors

- Less farms but bigger structures



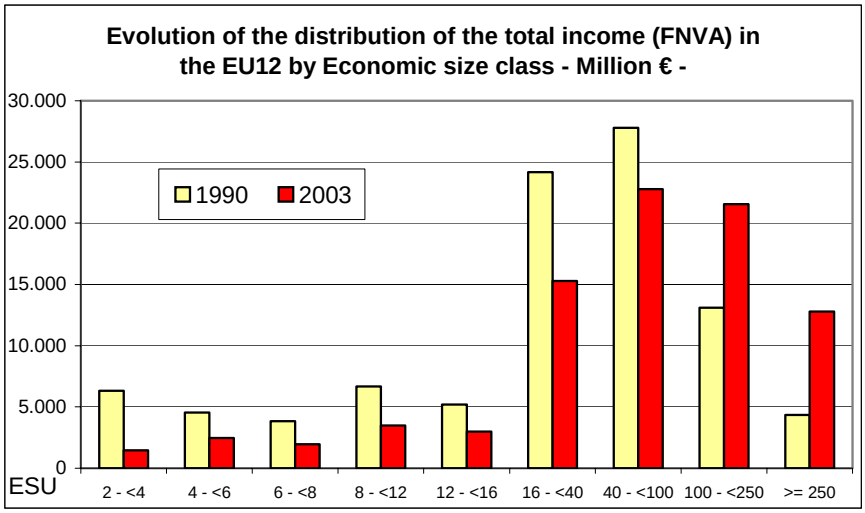
Over the 1990 – 2003 period, in the FADN sample, due to the 30% decrease of the number of business farms in the EU12, the remaining farms have grown in terms of area from 23 ha to 34 ha (+50%), in terms of livestock from 22 livestock units (LU) to 33 LU (+47%) and consequently in economic size. At the same time the average labour input per farm remained stable: the labour productivity increased.

- Higher economic size



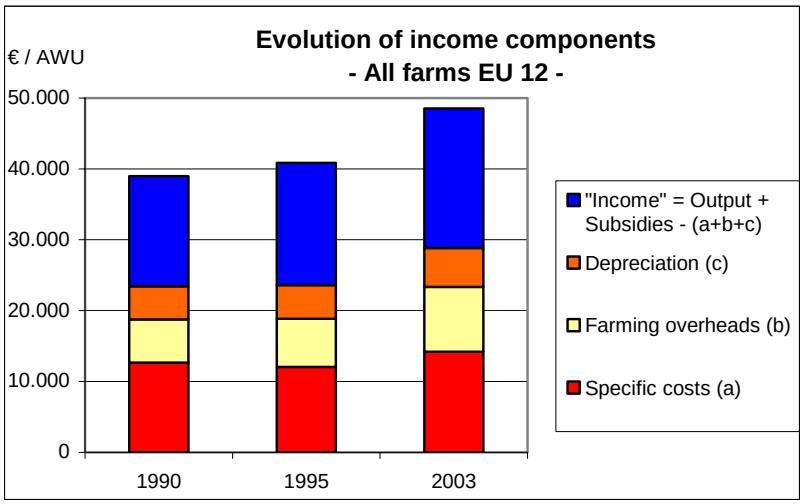
Between 1990 and 2003, the FNVA/AWU increased only for the farms with an economic size bigger than 250 ESU. These however represented only 1.4% of the European farms in 2003. The +28% increase in average income during this period is linked to two items:

the departure of numerous "small" farms[1] and the increase in economic size of the remaining ones. (All graphs by type of farm are available in Annex 4).



Looking at the distribution by economic size of the total agricultural value added in the FADN sample, the shift between size classes appears clearly: in 1990, "only" 18% of the total income was produced on farms with an economic size above 100 ESU; in 2003 farms in these size classes made up 41% of the total value added.

- Higher labour productivity



During the period 1990 – 2003, the higher costs by annual work unit (+23%) have been more than offset by an increase of the output plus subsidies by AWU (+26%), leading to a higher labour productivity: the income[2] by AWU increased by 26%.

[1] The smallest class (1-2 ESU) is not presented in this graph because from 2001, this class is not taken into account anymore in the FADN sample. Be aware also that part of the decreased number of farms in the smallest classes may be due to changes in sample, because over the period some Member States increased the minimum economic size of their sample.

[2] The income referred to is, as presented in the graphs: (Output + subsidies – depreciation – specific costs – farming overheads) by AWU. The difference with the FNVA is very small and is due to VAT balance and taxes.

The increase in labour productivity (in terms of income/AWU) was even bigger for crops and livestock mixed farmers (+43%), grazing livestock specialists (+43%), fieldcrops specialists (+39%) and milk producers (+30%). This is related to the increase in the hectares and animals that one farmer can handle. On the other hand granivores producers had less margin for progression because they are industrialised since a longer time and their income/AWU remained stable (all graphs are available in Annex 5).

Labour evolution on farms: number of ha and livestock units (LU) by AWU in the EU12

	Labour / farm (AWU)			ha/AWU			LU/AWU		
	1990	2003	03/90	1990	2003	03/90	1990	2003	03/90
Fieldcrops	**1.45**	**1.31**	**-10%**	**17.5**	**33.1**	**89%**			
Horticulture	**2.68**	**3.17**	**18%**	1.3	1.5	17%			
Wine	**1.44**	**1.70**	**18%**	6.0	7.2	21%			
Other perm. crops	1.33	1.30	-2%	5.1	6.5	27%			
Milk	1.60	1.72	8%	**18.4**	**27.9**	**52%**	**31**	**46**	**48%**
Grazing livestock	1.46	1.38	-5%	**29.3**	**42.9**	**46%**	29	43	47%
Granivores	**1.69**	**1.94**	**15%**	6.8	12.7	88%	152	192	27%
Mixed	1.68	1.68	0%	**17.1**	**34.6**	**102%**	**27**	**52**	**94%**
All Farms	**1.51**	**1.51**	**0%**	**15.2**	**22.8**	**50%**	**15**	**22**	**47%**

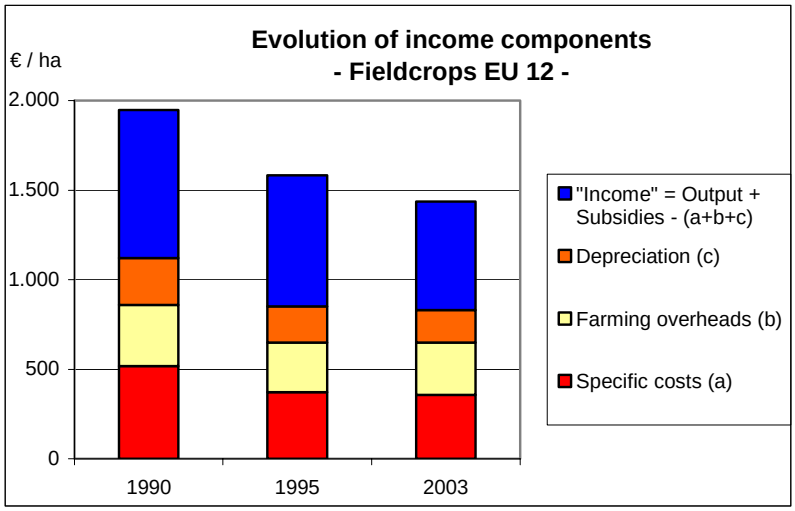
Source : DG AGRI G3 EU FADN

In 1990, on grazing livestock farms, one AWU took care of 29 LU, in 2003 this number reached 43 LU. On mixed farms, the number of hectares cultivated by one AWU increased from 17 to 35 ha. For granivores specialists, the number of LU by AWU increased also (from 152 to 192 LU/AWU), yet at the same time the total labour on the farm increased.

Larger structures with the same labour force means also increased technicity and higher investments. Over the period, the capital by AWU increased by 17% in average. But by type of farm, the evolution was much more contrasted: for mixed, fieldcrops and milk specialists the increase was very big (+38%, +32% and +24% respectively), but for horticulture, other permanent crops and granivores producers, this ratio slightly decreased (all graphs available in Annex 6).

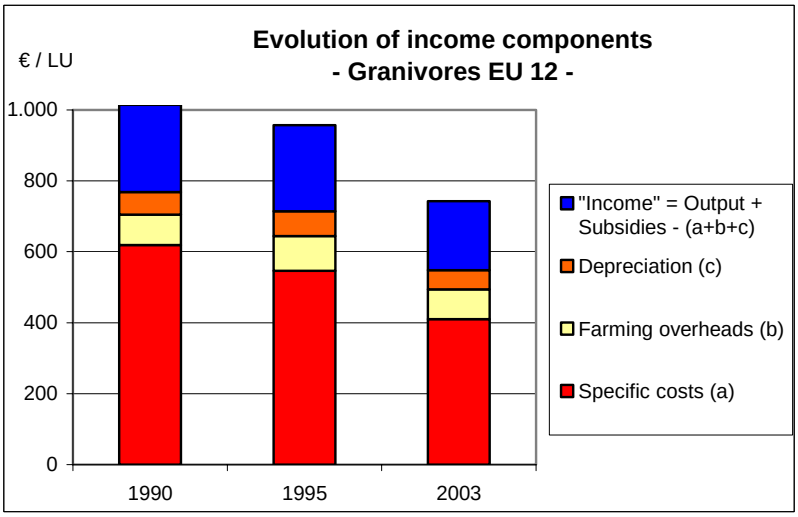
But in the end, the income increase in comparison to the capital invested was not much. In average in the EU12, the FNVA over the average capital on the farm increased from 20% to 22% between 1990 and 2003. The situation differs among Member States: the Danish farms lost income in comparison to the huge capital invested (FNVA/capital decreased from 14% to 8%); the Spanish farms on the other hand increased this ratio (from 13% to 24%). By type of farm, the more noticeable change is the decrease in value added over capital for wine specialists (from 26 to 22%) and the increase for grazing livestock specialists (from 15% to 19%).

- A decreased income by hectare



For example, on specialists' fieldcrops farms, the enlargement has enabled considerable economies of scale: the intermediate consumption by hectare has decreased by 25%. But at the same time, the output plus subsidies by hectare has decreased by 26%. In the end the "income" by hectare has also decreased by 27%. It means that to keep or increase their income farmers need more hectares.

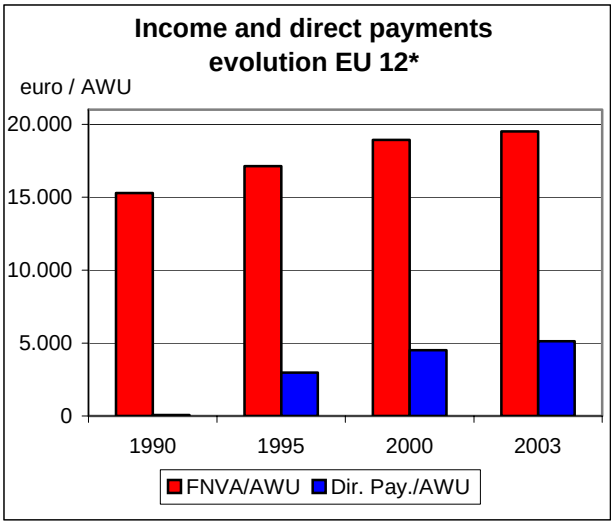
- A decreased income by animal



On granivores farms, the reduction of costs by livestock unit between 1990 and 2003 was very important (-29%). This can be explained by the decreasing feed costs (-38%)[3] and economies of scale. It has to be noted however that the output + subsidies earned per LU decreased considerably (-27%). This is reflected in a decrease in income per livestock unit from 250 €/LU to 195 €/LU (-21%).

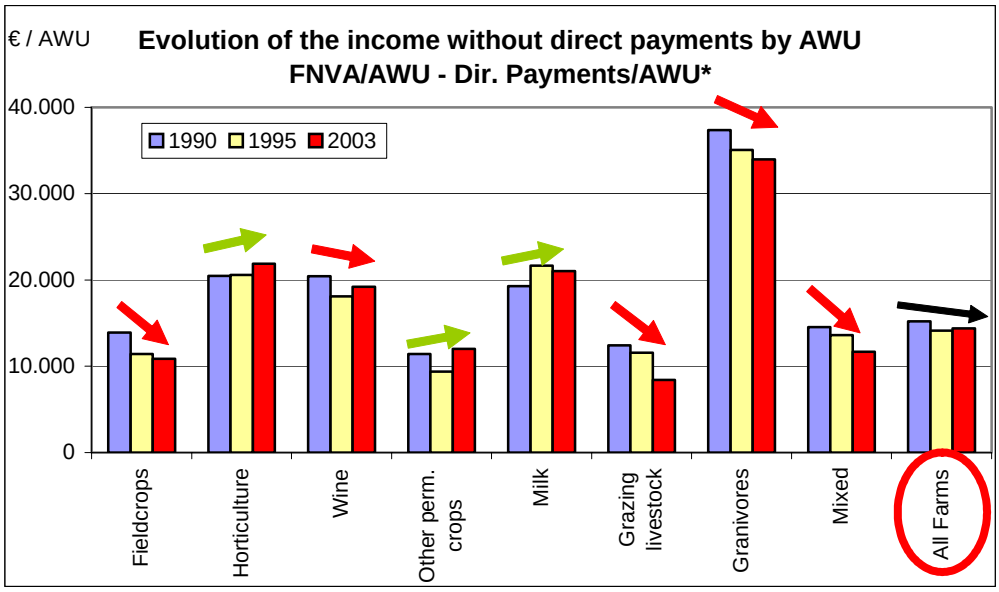
[3] On average in the EU 12, the feeding costs decreased of 34% by livestock unit between 1990 and 2003 (from -19% for milk specialists to -40% for mixed producers).

- Increased direct payments



* For some years and some MS, certain payments were included in the price (ex.: Tobacco payments in France)

With the change of agricultural policy the support previously given through price progressively evolved towards direct payments. Between 1990 and 2003 the average direct payments increased from nearly zero to 5 100 €/AWU.



* For some years and some MS, certain payments were included in the price (ex.: Tobacco payments in France)

In real terms and at aggregate EU level, the FNVA/AWU excluding the direct payments decreased by 5% over the period. However when studying the evolution of the FNVA/AWU by type of farming, one can see that the more supported sectors: fieldcrops, grazing livestock and mixed crops and livestock, would have had a bigger decrease in income without direct payments. In 2003 these types of farms represented 52% of the farms in the EU15.

External factors: Wages, Rent and Interests

Wages: over the period the paid labour increased on farms (from 0.22 to 0.33 AWU in the EU12). Paid labour is particularly important in horticulture (1.7 AWU in 2003), for granivores (0.6) and wine (0.6). Among Member States, the Netherlands and the UK have the highest average paid labour (1.0). It is interesting to notice that in Germany paid labour was limited to 0.2 in 1990 and that in 2003 with the addition of the eastern regions, paid labour increased to 0.7 AWU.

In average the wages paid by farm increased more than the quantity of paid labour, traducing an increase in the wages over the period. Not surprisingly the highest wages paid by farm are in the Netherlands (25 000 € in 2003) and is has almost doubled over the period.

Rent: In the FADN database, the rent paid on the farm may include also the rent of the buildings. In the EU12, the rent did not increase much over the period: from 170 €/ha in 1990 to 180 €/ha in 2003 (+4%). The highest land price is in horticulture (920 €/ha) and it has increased by 28% over the period. The rent for wine producers remain high (700 €/ha) but it was higher in 1990 (930 €/ha). The Dutch have the highest land cost, 710 €/ha, whereas in Portugal the rent is limited to 55 €/ha.

Interests paid: In the EU12, between 1990 and 2003, the average interests paid by farm decreased from 2360 € to 2070 €. Even if investments and loans increased over the period[4], the decreased costs of "money" enabled a decrease of the interests paid on farms. However in the two Member States with the highest interests paid: Denmark (30 000 €) and the Netherlands (18 000 €), the amount of interests paid increased over the period: +54% and + 13% respectively. On the contrary, the interests paid decreased in the UK (from 12 400 to 5 500 €, -56%).

External factors evolution

	Rent / ha			Paid labour / farm			Wages / farm			Interests / farm		
	1990	2003	03/90	1990	2003	03/90	1990	2003	03/90	1990	2003	03/90
Fieldcrops	198	176	-11%	0.2	0.2	18%	2 752	3 698	34%	1 922	1 678	-13%
Horticulture	**718**	**921**	**28%**	**1.2**	**1.7**	**49%**	**19 425**	**28 654**	**48%**	5 398	4 056	-25%
Wine	**929**	**703**	**-24%**	0.4	0.6	63%	4 924	8 428	71%	1 599	1 262	-21%
Other perm. crops	323	292	-10%	0.2	0.3	40%	3 017	3 855	28%	400	283	-29%
Milk	185	213	15%	0.1	0.2	38%	2 134	3 306	55%	**4 553**	**5 112**	**12%**
Grazing livestock	**73**	**87**	**19%**	0.1	0.1	-1%	1 624	1 557	-4%	2 025	1 404	-31%
Granivores	316	337	7%	0.4	0.6	49%	**6 756**	**11 216**	**66%**	**10 525**	**8 524**	**-19%**
Mixed	166	155	-6%	0.2	0.2	36%	2 129	3 465	63%	3 364	4 097	22%
All farms	**171**	**178**	**4%**	**0.22**	**0.33**	**49%**	**3 156**	**4 947**	**57%**	**2 356**	**2 073**	**-12%**

	Rent / ha			Paid labour / farm			Wages / farm			Interests / farm		
	1990	2003	03/90	1990	2003	03/90	1990	2003	03/90	1990	2003	03/90
BEL	171	195	14%	0.2	0.3	76%	2 907	6 635	128%	7 475	8 755	17%
DAN	**344**	**405**	**18%**	0.3	0.6	83%	7 416	**18 177**	145%	19 419	**29 927**	54%
FRG	281	276	-2%	0.2	0.3	39%	3 532	5 780	64%	3 778	4 156	10%
DEU		208			**0.7**			**13 205**			4 977	
ELL	**644**	**273**	**-58%**	0.1	0.2	43%	923	**813**	-12%	575	42	-93%
ESP	86	91	6%	0.2	0.3	40%	2 624	2 755	5%	193	237	23%
FRA	139	143	3%	0.2	0.5	111%	4 014	8 464	111%	4 382	4 061	-7%
IRE	239	237	-1%	0.1	0.1	-40%	1 907	1 147	-40%	2 641	913	-65%
ITA	172	198	15%	0.1	0.3	177%	1 693	4 094	142%	291	182	-37%
LUX	186	187	0%	0.1	0.2	87%	1 969	4 105	108%	5 966	5 074	-15%
NED	**437**	**709**	**62%**	0.7	**1.0**	40%	13 462	**25 035**	86%	15 922	**17 998**	13%
OST		204			0.1			1 165			1 427	
POR	**97**	**55**	**-43%**	0.3	0.2	-26%	1 690	1 585	-6%	344	113	-67%
SUO		155			0.2			3 692			2 424	
SVE		135			0.3			6 692			7 841	
UK	127	165	30%	**1.1**	**1.0**	**-11%**	20 183	**21 081**	4%	12 431	5 486	-56%
EU12	**171**	**178**	**4%**	**0.2**	**0.3**	**49%**	**3 156**	**4 947**	**57%**	**2 356**	**2 073**	**-12%**
EU15		**172**			**0.3**			**5 398**		**2 356**	**2 189**	**-7%**

Source: DG AGRI G3 - EU FADN

[4] Between 1990 and 2003, the gross investment increased of 16% in average in the EU12 (from x 3 in Denmark to +3% in the Federal Republic of Germany). The total liabilities increased of 50% and reached 45 000 € by farm in 2003 in the EU12. The major increase of liabilities took place on mixed farms (+95%) and on milk specialised farms (+89%).

5. INCOME FORECAST 2013

In a static model based on 2003 FADN data, the evolutions in prices, yields and intermediate consumption foreseen in 2013 were introduced for the main crops and for livestock[5]according to the medium-term forecasts of DG AGRI G2[6]. No change in the use of the area is taken into account as for example the development of energy crops. Moreover, the evolution of the agricultural policy has been simulated, including modulation and regionalisation for the Member States that have chosen it.

With these hypotheses without applying a deflator, in 2013 the average income by farm would increase by 3% in the EU15. In average the output would remain stable and the subsidies would increase by 13%.

The results are quite different according to the type of farms, for fieldcrops a 14% decrease is foreseen: the increases in yields and subsidies do not compensate the increased costs and the prices decrease. In the milk sector, the price reduction and the increased costs are more than compensated by the higher subsidies and the income by farm could rise by 16%. For grazing livestock and granivores the income increase (+11% and +50% respectively) is linked to the raising prices. For granivores these forecasts do not take into account the production cycle.

The evolution is also very different according to Member States: from -2% in Italy to +16% in Denmark where animal production is very important.

Applying a deflator, the European FNVA by farm would decrease by 11% in 2013 in real terms with an agricultural structure as in 2003. The income by farm can only be maintained or grow if the number of farms is still decreasing.

2013 income forecast by type of farm

	2013/2003		
	Output	Subsidies	FNVA/farm
Fieldcrops	-7%	4%	-14%
Horticulture	0%	9%	-2%
Wine	0%	-1%	-1%
Other perm. crops	0%	-2%	-1%
Milk	-3%	76%	16%
Grazing livestock	7%	1%	11%
Granivores	14%	0%	50%
Mixed	3%	9%	13%
All farms EU15	**0%**	**13%**	**3%**
All farms EU15 in real terms	**-14%**	**-2%**	**-11%**

[5] No changes have been introduced for fruit and vegetables and for permanent crops.

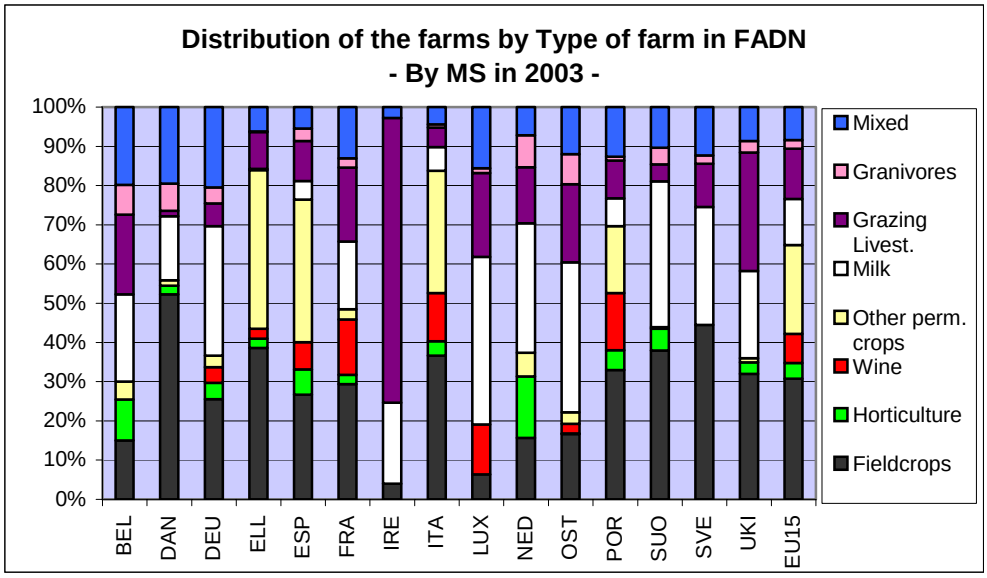
[6] Prospects for agricultural markets and income in the European Union 2006-2013, July 2006

2013 income forecast by Member State 2013 / 2003

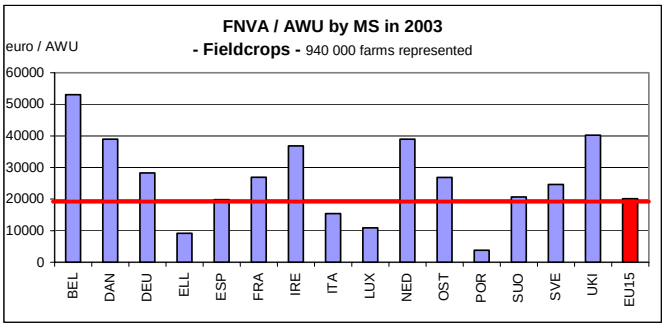
	2013/2003		
	Output	Subsidies	FNVA/Farm
BEL	3%	29%	12%
DAN	4%	13%	16%
DEU	0%	20%	9%
ELL	-3%	13%	-1%
ESP	1%	14%	4%
FRA	0%	10%	3%
IRE	3%	11%	11%
ITA	-1%	7%	-2%
LUX	1%	11%	10%
NED	0%	68%	4%
OST	1%	9%	6%
POR	-1%	6%	0%
SUO	-2%	4%	1%
SVE	-2%	15%	4%
UKI	-1%	12%	2%
All farms EU15	**0%**	**13%**	**3%**
All farms EU15 in real terms	**-14%**	**-2%**	**-11%**

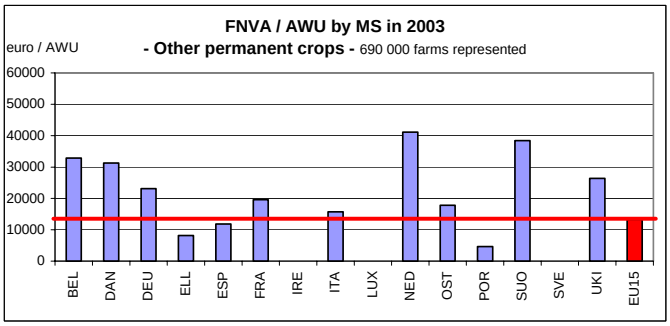
ANNEX 1 : Distribution of farms in 2003 FADN sample

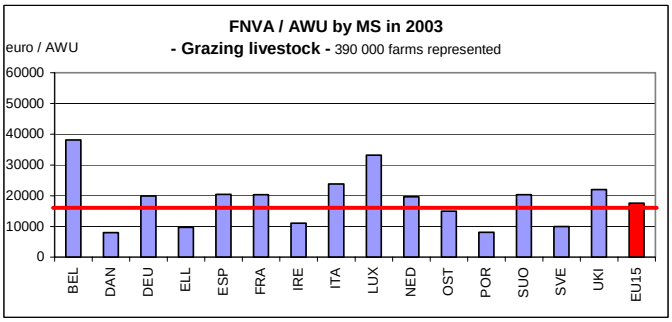
by Member State according to Type of Farm

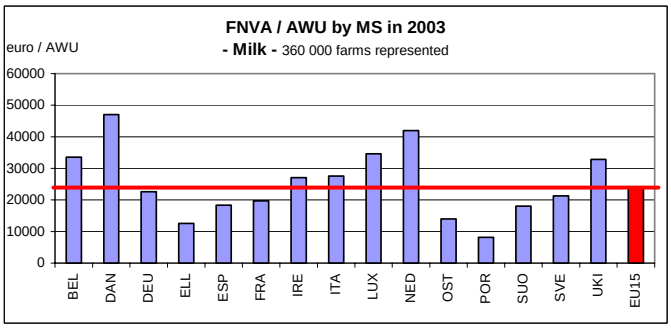


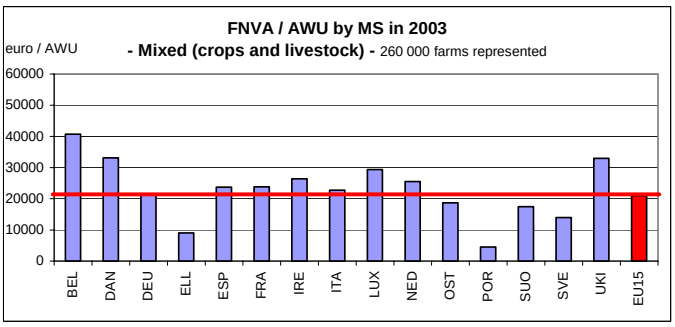
ANNEX 2 : FNVA/AWU in 2003 by Member State for each type of farm

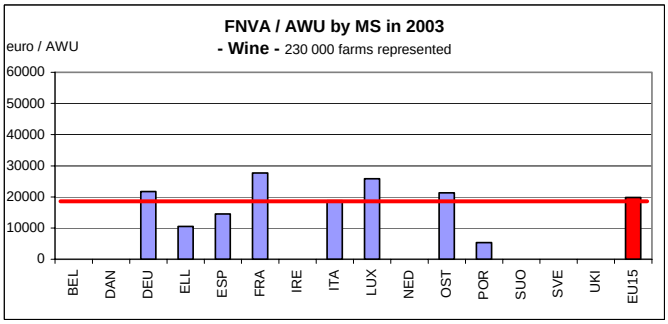


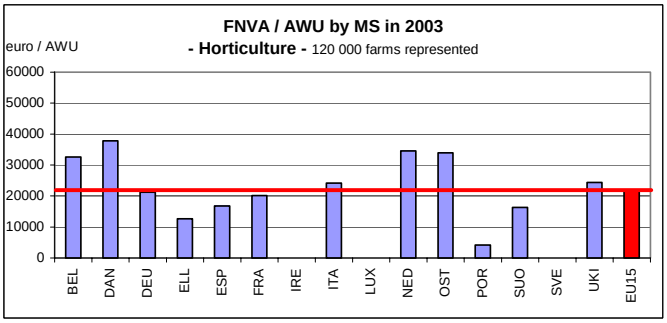


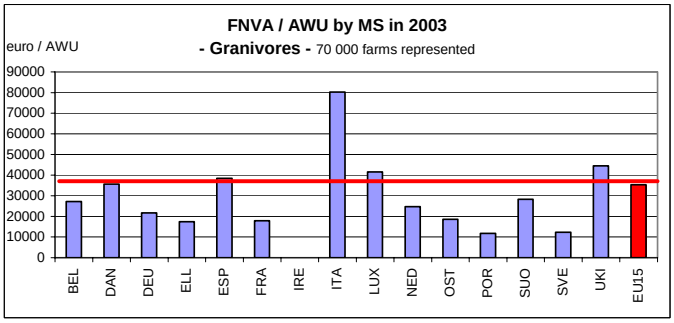




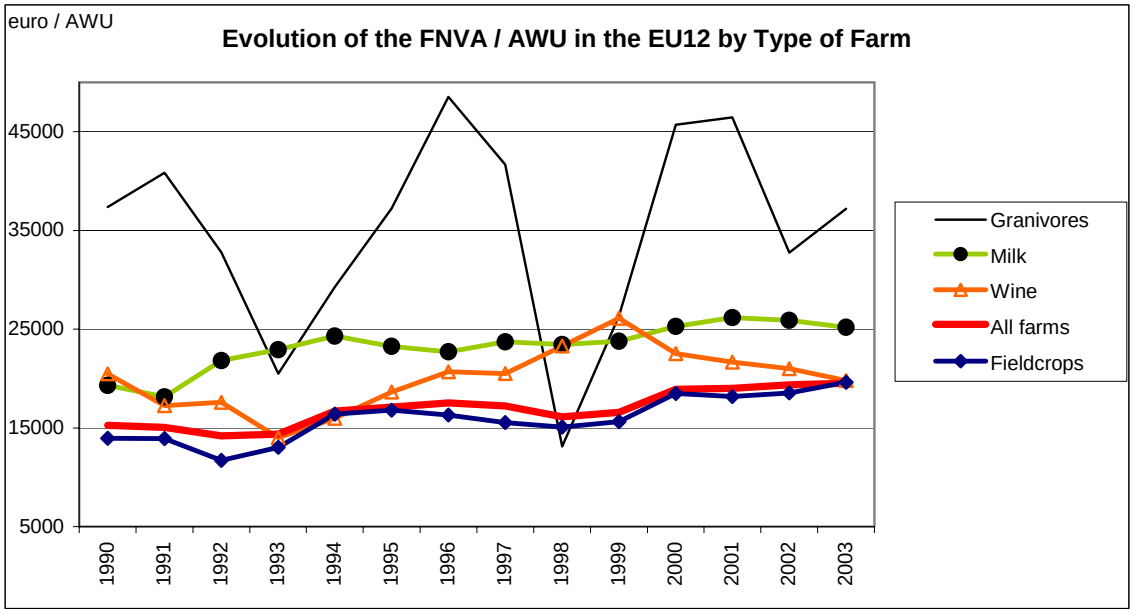


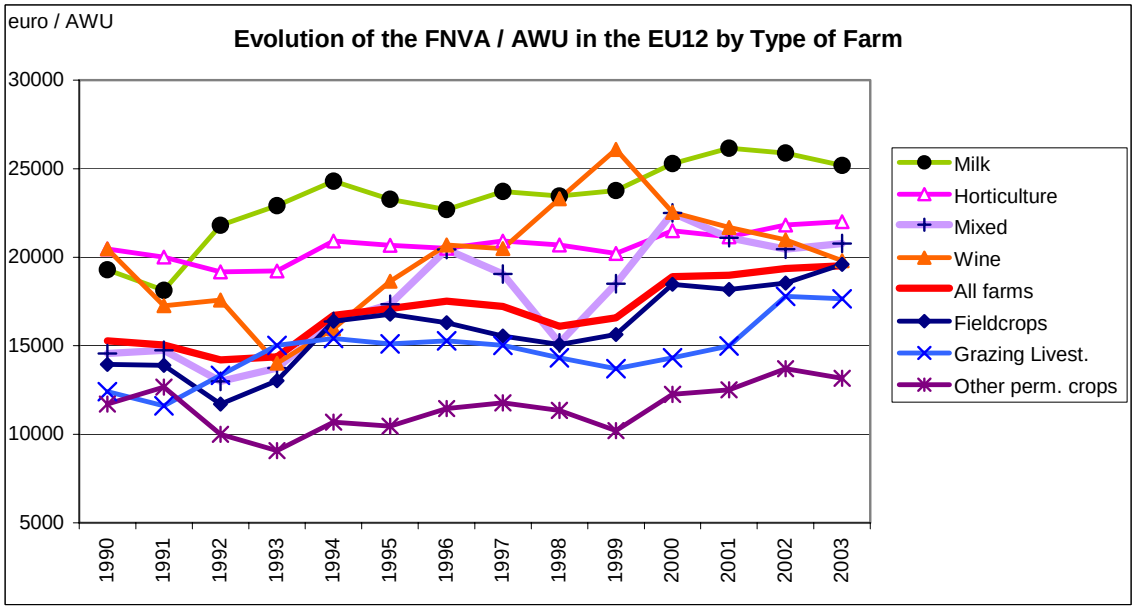




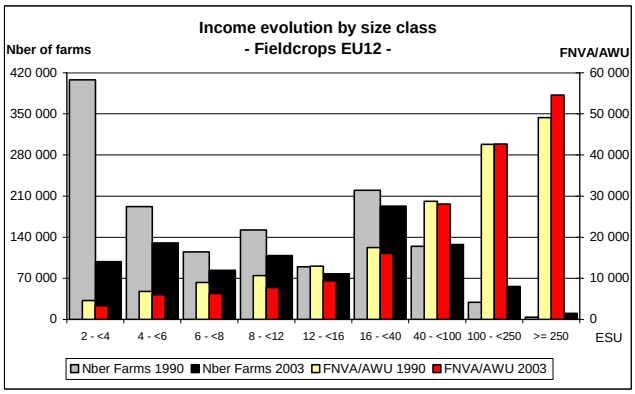


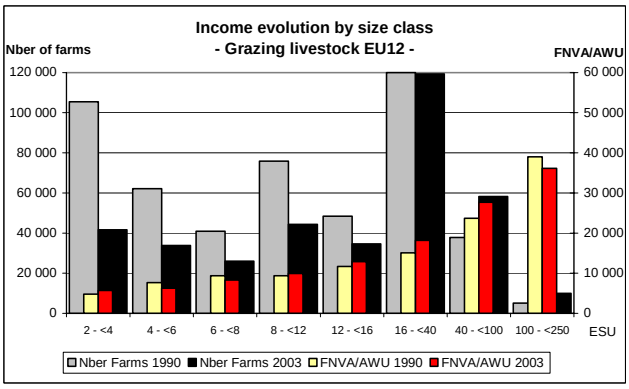
ANNEX 3 : FNVA/AWU evolution by type of farm

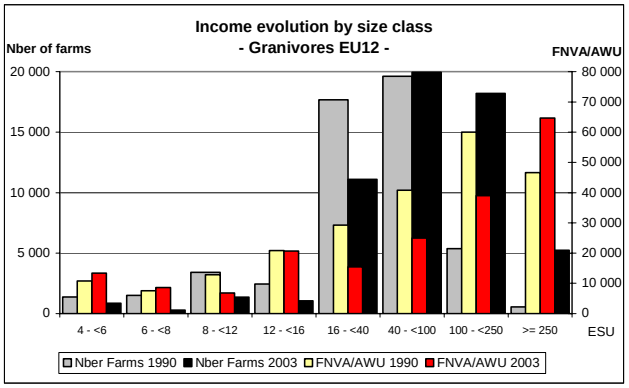


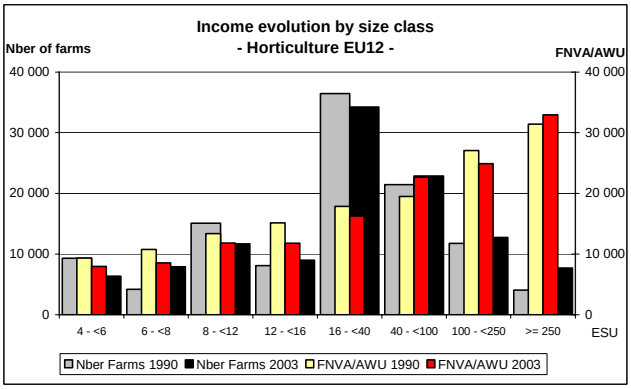


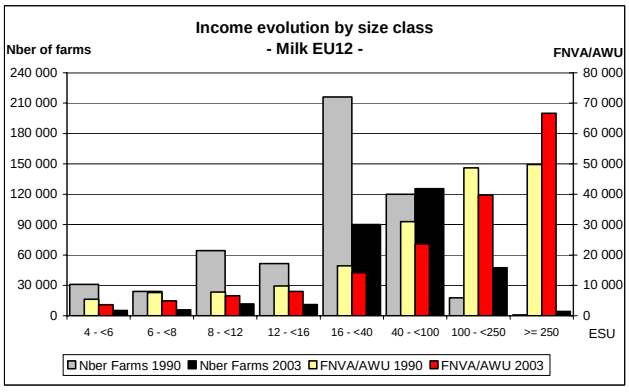
ANNEX 4 : FNVA / AWU by Economic size class

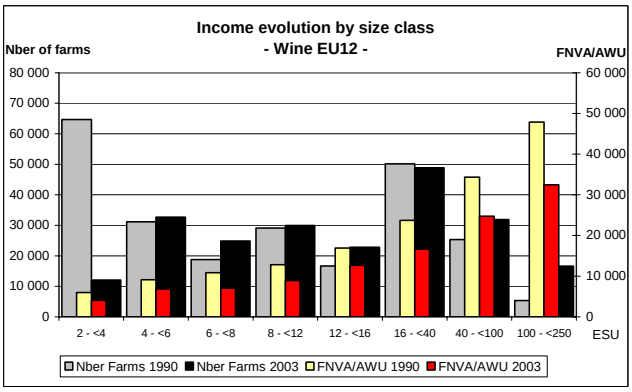


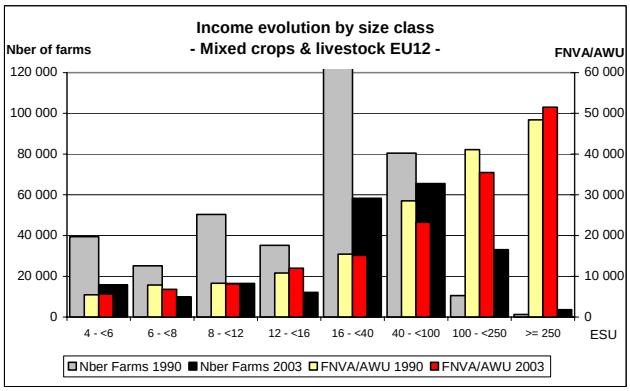


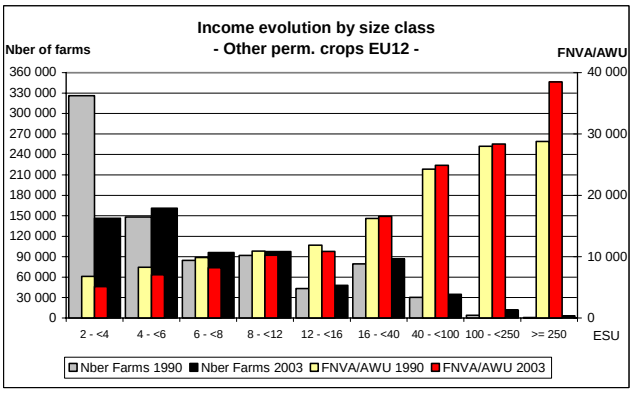




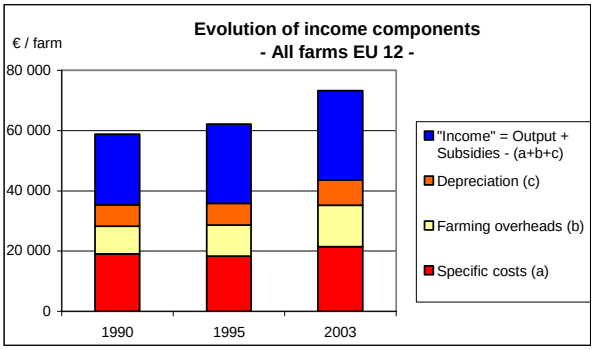


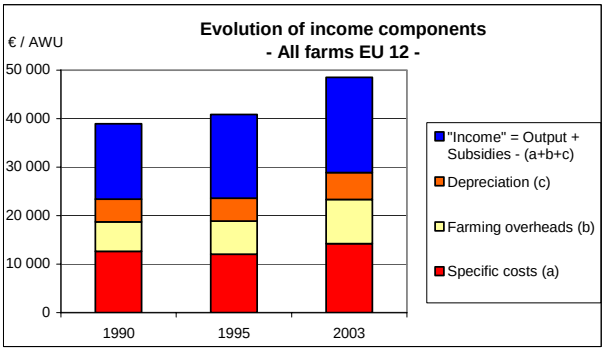


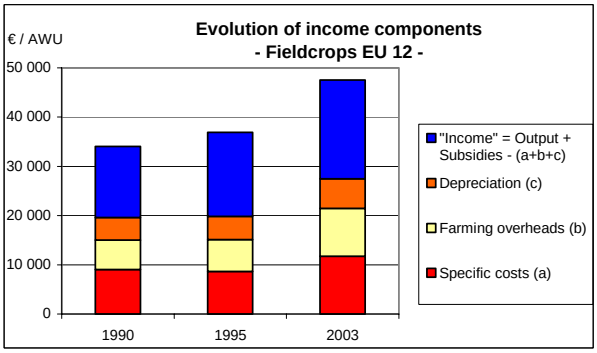


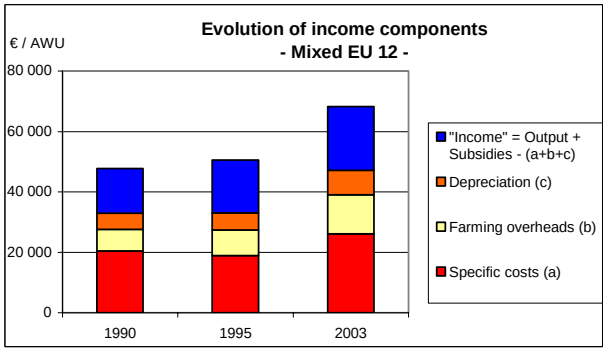


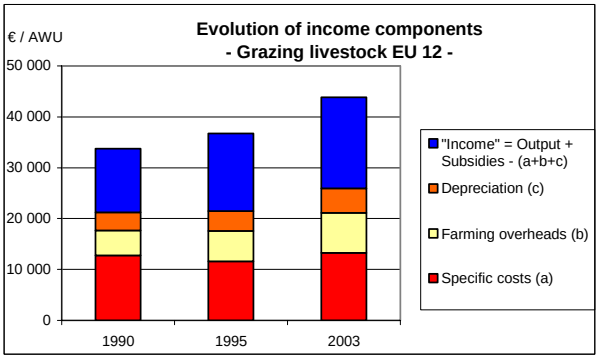
ANNEX 5 : Labour productivity

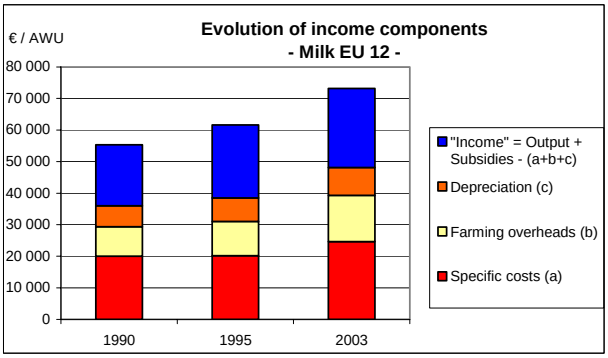


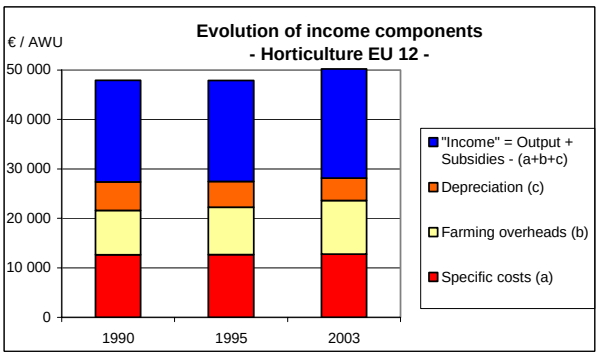


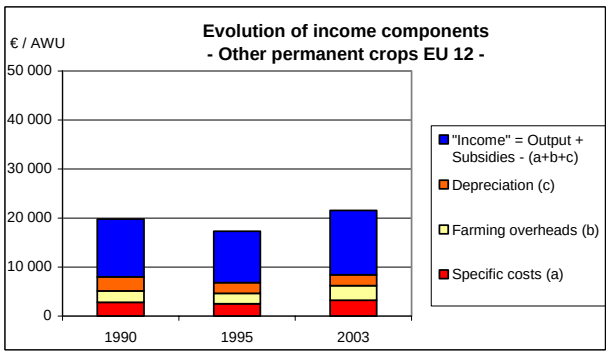


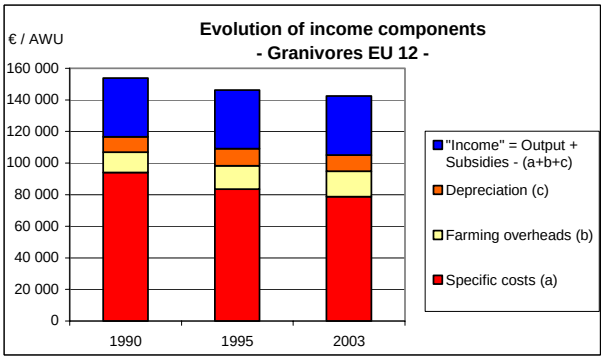


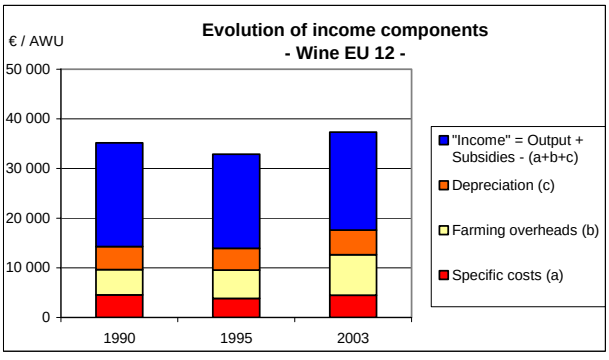












ANNEX 6 : Capital by farm