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L.3. Microeconomic analysis of EU agricultural holdings
L.5. Agricultural trade policy analysis

IMPACT ASSESSMENT OF A POSSIBLE FREE TRADE AGREEMENT (FTA) BETWEEN THE EU AND MERCOSUR: A MICROECONOMIC APPROACH BASED ON FARM ACCOUNTANCY DATA NETWORK (FADN) DATA

SUMMARY OF RESULTS

This analysis provides results on the **impacts of a possible FTA with Mercosur on EU farm income and agricultural employment** at the level of Member States, regions and farm-type production activities.

The analysis is based on in-house work. It transfers at farm level (micro-economic) results of previous sector-specific simulations. The micro-economic simulation is performed on the basis of the most recent data (2007) of the Farm Accountancy Data Network (FADN).

The simulations were carried out under the assumption of the **most far-reaching liberalisation scenario** ("Mercosur request 2006")

The aggregate EU-wide **impact of the scenario** shows a decline of farm income by **-1.6%**, composed of a -1.1% reduction due to lower prices and a potential further decrease of -0.5% resulting from some farms quitting production, thus potentially dropping **farm employment by 0.4% of the workforce**.

The averages hide, however, large differences between affected Member States and regions. This is because of their exposition to the projected deeper price changes on the meat market or due to particular economic vulnerability of their farms. In result, **farm incomes would dip 2-3% in MS more dependent on meat** (especially beef) production like **Ireland, Belgium, Denmark and Luxemburg**. Several regions in other Member States, especially in France and Germany, would face similar or even deeper income reductions (e.g. **Limousin and Auvergne** in France, with -3% to -7.5%).

The **effect on farm employment amounts to 33 000 annual working units under threat (or 0.4% of workforce)**. The effect would be concentrated (2%-3.5% of workforce affected) in regions with economically vulnerable farms specialised in beef, pork and poultry production. These are found mainly in north-western Europe (in **France, Belgium, Germany**), with relatively less impact in south-eastern EU (however, **the impacts on Mediterranean Member States are likely to be substantially underestimated**, given that fruit and vegetables and specialised crops could not be covered in the present analysis).

Table 1: Main results

Effect of price changes on INCOME		**absolute change/AWU**	**relative change/AWU**
Changes - EU average		- 180 €	-1.1%
Most affected Member States		DK, BE (> -1000 €)	IE, BE, DK, LU, FR **(> -1.5%)**
Most affected types of farming		pigs & poultry, cattle (> -1000 €)	pigs & poultry, cattle (-5%)
Joint INCOME effect of price changes and long term non-viability of farms		**absolute change/AWU**	**relative change/AWU**
Changes – EU average		- 274 €	-1.6%
Effect on farm EMPLOYMENT		**Short term**	**long term**
Share of employment in farms where income becomes negative (unsustainable)		0.1%	0.4%
Level of employment in farms where income becomes negative (in full time equivalent)		5 000 AWU	33 300 AWU
MS with highest effect on employment	in relative terms	SK, CY (>0.6%)	BE, CZ, FR, DE, LU (>1%)
	in absolute terms	RO (>1000 AWU)	FR, PL, DE (> 4000 AWU)
Sectors with highest effect on employment	in relative terms	pigs & poultry (0.5%)	pigs & poultry, cattle (1.5%)
	in absolute terms	pigs & poultry, cattle, fieldcrops (> 1000 AWU)	cattle, mixed livestock, milk (> 6000 AWU)

Results are subject to caution due to the limitations of the used methodology (see under 2.analytical approach).

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DETAILED ANALYSIS

1. INTRODUCTION

The present note aims at showing, from a microeconomic angle, the impact of a possible EU-Mercosur Free Trade Agreement (FTA) on EU farm income and employment.

It represents a development and a deepening of the analysis carried out by DG AGRI immediately prior to the formal relaunching of the FTA talks in May 2010. The analysed FTA scenario corresponds to "Mercosur request 2006". This particular scenario was chosen because it is the most ambitious offer on the negotiation table so far, which would bring about the largest effects on EU agriculture as a whole and therefore produce the best-contrasted assessment of the impacts at disaggregated level.

Building up on the results of the econometric simulations run at that time, a specific micro-economic approach based on FADN data has been set up. This has allowed to transfer the EU-wide sector-specific price impacts to the level of the individual farms, thus providing for more detailed results, both in terms of geographical disaggregation and of coverage of different production activities.

2. ANALYTICAL APPROACH

2.1. From EU-wide sector-specific results to individual farm level

The starting point of the impact assessment is the outcome of the sector-specific econometric simulations carried out with the Aglink-Cosimo model[1] before May 2010.

To summarise, the following price changes for the considered policy scenario are derived from the sectorial simulation, based on the Aglink model:

	Wheat	Coarse grains	Milk	Sugar	Beef	Pork	Chicken	Oilseeds
Price change:	-0.7%	-0.7%	0.3%	-0.2%	-4.8%	-1.8%	-2.0%	0.4%

Against this background, the estimated price changes for the single products following the implementation of the EU-Mercosur trade agreement were transmitted to the production value of individual farms included in the last available FADN sample (2007), thus allowing to simulate the impact on farm incomes and the pressure on agricultural employment.

The results of the microeconomic simulation are presented at a disaggregated geographical level (Member States, regions, LFA vs. other areas) and by farm type. For the most sensitive cattle sector, the information is also available by type of production system and intensity of production.

[1] The Aglink-Cosimo model is a sectoral model developed in cooperation by the OECD and the FAO and used in DG AGRI for medium-term market projections and policy analysis. The Aglink model covers the agricultural sector of the main world countries for the main agricultural commodities, namely **arable crops** (wheat and coarse grains), **sugar complex** (sugar and ethanol), **meats** (beef, pork and chicken) and **dairy products** (butter, milk powders and cheese).

The following caveats to the analysis should be mentioned:

(1) For some important agricultural products not covered by Aglink[2], no price drop was applied, which may notably lead to an under-estimation of the overall impacts;

(2) The microeconomic simulation is purely static, that is no structural development is assumed, neither in farm structure, nor in the farm production mix;

(3) As the static nature of the simulation does not allow an adjustment of production quantities within and between individual holdings, the overall reduction in production quantities for the various agricultural commodities derived from the sector-specific simulation could not be transmitted to the farm level. A rough quantification of this effect of the overall reduction of production volumes on farm income was only performed for the agricultural sector as a whole, at Member State level (see heading 3) joint effect), but it was not taken into consideration in the more disaggregated analyses (heading 2);

(4) The assumption that the average price variation would equally apply everywhere in the EU does probably not reflect the reality and could bias accordingly the distribution of the geographical impacts.

2.2. Specifications about FADN

The above-mentioned price changes are applied to individual farms from FADN 2007 sample (see Annex for details of the methodology).

The impact on income is measured with Farm Net Value Added changes by Annual Work Unit[3].

The impact on employment on farms is evaluated in the short term by the labour force on farms for which Gross Farm Income[4] turns negative - thus unsustainable, and in the long term: by the labour force on farms for which Economic Profit turns negative[4].

In 2007 the farms represented in the EU FADN had on average € 16 700 of Farm Net Value Added (FNVA) by Annual Work unit (AWU) annually, ranging from less than € 3 000/AWU in Romania to close to € 60 000/AWU in Denmark. Also among farms within Member States there is much variety of farm income levels.

In 2007 about 2% farms in the EU faced a negative Gross Farm Income (GFI) level, which means that they were not able to cover their direct costs of production. Such situation is unsustainable even in the short run.[4] There were also 63% of EU farms (with 59% of

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[2] The following products are not included (or not properly modelled) in Aglink: sheep&goat, eggs, wine&spirits, fruits&vegetables, specialised crops and a large number of transformed products.

[3] Gross Farm Income (GFI) = total output – total intermediate consumption + current subsidies & taxes

Farm Net Value Added (FNVA) = Gross Farm Income – depreciation

Economic Profit (EP) = all farm output and subsidies – all farm costs (including imputed costs of own factors)

Annual Work Unit (AWU) = equivalent of one person fully occupied in the farm.

[4] There were 2% of the workforce engaged in those farms. Incidentally, about 2% of the workforce leaves agricultural sector in the EU annually. According to Eurostat's Agricultural Labour Input Statistics, the agricultural workforce of EU-25 fell from 9.7 million AWU in 2004 to 8.7 million AWU in 2009.

workforce) facing a negative Economic Profit (EP) in 2007. Negative values of this indicator meant that the own factors of the farms were remunerated on a lower level than in non-agricultural sector. In the long run, such a situation could lead to leaving the agriculture by those involved.

The following box provides further explanations about above-mentioned caveats

Caveats for the micro-economic approach

For the interpretation and use of these results, it should be kept in mind that it is a purely static simulation of a change occurring in one step. No structural development is assumed nor farmers' adaptation of farm management practices between base year 2007 and the year of effective implementation of such policy. Results of the simulation should therefore be considered as an assessment of the adjustment challenges which producers may meet in the new situation. These adjustments would be relevant especially for estimating the long term, full effect of the scenario. Taking account of the structural adjustment would probably soften the negative effects and change the pattern of most affected farms (by types of farming, regions, etc). On the other hand, farms ceasing production would lose income and thus deepen the negative income effect, again changing the pattern of the affected farms.

In addition, relatively small market price changes combined with a limited number of affected farms in the sample, and a further split of the study into several dimensions of the analysis (types of farming, regions, paid/unpaid workforce) produce in cases feeble effects. Also the effective assumption that the average EU price changes would apply equally everywhere in the EU is a simplification which may be possibly nuanced in further analysis. Interpretation of less distinct effects should then be particularly cautious.

FADN survey represents about 40% of all farms, 85% of AWU, over 90% of utilised agricultural area, livestock and standard gross margins.

3. DETAILED RESULTS

3.1. Income

Implementation of the price scenario would reduce the average EU farm income by **1.1%** from € 16 700 to € 16 500 FNVA/AWU. Since the price reductions in the scenario are stronger for the animal products, the farms oriented towards animal production suffer more losses of income.

Specialist granivore (pig and poultry) and specialist cattle farms would lose on average 5% of FNVA/AWU. Relatively more granivore farms than cattle specialists are in a weaker financial situation, and they engage on average more labour, what amplifies the impact on AWU in pig and poultry specialists. For granivores, losses on sold products would overweigh savings on cheaper inputs. Among cattle producers, those with intensive[5] cattle breeding and fattening would be affected the most. That is in consequence of their higher cattle output/AWU what emphasizes the impact. The negative effect would be felt particularly in granivore and cattle specialist farms in the Netherlands, Bulgaria, Belgium, Denmark, France, Ireland and Germany. Because of the livestock component, also the mixed farms' incomes are reduced by an average of 2-3% in result of the tested scenario. Here, mixed farms in Malta, UK, Sweden and Finland would suffer most.

[5] Intensive cattle farming is defined by stocking density higher than 1.4 Livestock Unit/ha.

Given the local composition of farming and the workforce engaged, the regional impact on incomes per AWU would be most significant in several regions in western and northern Member States of the EU. These are regions in France, especially Limousin and Auvergne where the decrease of FNVA/AWU would be in the range of 3-7% where farms rely heavily on grass-fed beef production. Others are in Ireland and Scotland (beef farming), the regions of Belgium and Germany (pigs & poultry) the income/AWU would drop by 2% to 3%. Similar impact could also occur in certain regions of Sweden (mixed animal farms), Spain (cattle, granivores) and Hungary (pigs). In many other regions the average income reduction would be less than 2%. Even regional average however hides many areas more deeply affected, what is particularly true for larger FADN regions like the Czech Republic, Slovakia or Austria. The existing variation of their farming and thus of the impact on income is levelled out in average figures, while it could be visible if they were split in smaller but differing areas.

On the Member State level, the Irish farmers appear affected the most as the analysed price scenario would reduce their average FNVA/AWU by 2.8%. The negative impact in Belgium would also exceed 2% of FNVA income, while Denmark, Luxemburg and France would see a reduction of more than 1.5%. The FNVA/AWU would be affected the least in Greece, Romania, Bulgaria and Cyprus.

The average farm income impact could be further affected by income loss in farms abandoning production completely in consequence of lower prices. This is discussed further under the heading 4.

Table 2 . Income indicator - Farm Net Value Added by farms and AWU, in MS

	FNVA / farm (€ '000)				FNVA / AWU (€ '000)			
	2007	scenario	difference		2007	scenario	difference	
BE	84.5	82.7	-1.9	-2.2%	43.8	42.8	-1.0	-2.2%
BG	8.5	8.4	-0.1	-0.6%	3.5	3.5	0.0	-0.6%
CY	9.0	8.9	-0.1	-0.7%	7.5	7.5	0.0	-0.7%
CZ	111.2	109.6	-1.6	-1.4%	13.5	13.3	-0.2	-1.4%
DK	91.7	89.9	-1.7	-1.9%	58.7	57.6	-1.1	-1.9%
DE	86.5	85.3	-1.2	-1.4%	37.7	37.1	-0.5	-1.4%
EL	14.5	14.5	0.0	-0.2%	12.4	12.4	0.0	-0.2%
ES	28.2	28.0	-0.2	-0.8%	20.8	20.7	-0.2	-0.8%
EE	36.8	36.6	-0.2	-0.7%	13.4	13.3	-0.1	-0.7%
FR	63.0	62.0	-1.0	-1.5%	33.0	32.5	-0.5	-1.5%
HU	24.7	24.4	-0.3	-1.2%	13.2	13.1	-0.2	-1.2%
IE	25.6	24.9	-0.7	-2.8%	22.6	22.0	-0.6	-2.8%
IT	34.8	34.6	-0.2	-0.7%	24.8	24.6	-0.2	-0.7%
LT	20.9	20.7	-0.1	-0.6%	10.5	10.4	-0.1	-0.6%
LU	66.5	65.3	-1.2	-1.8%	40.1	39.4	-0.7	-1.8%
LV	17.5	17.4	-0.1	-0.7%	7.6	7.5	0.0	-0.7%
MT	29.2	29.0	-0.2	-0.7%	15.5	15.4	-0.1	-0.7%
NL	121.3	120.4	-0.9	-0.7%	43.8	43.5	-0.3	-0.7%
AT	40.4	40.0	-0.5	-1.2%	25.4	25.1	-0.3	-1.2%
PL	11.7	11.5	-0.1	-1.3%	6.7	6.6	-0.1	-1.3%
PT	11.6	11.5	-0.1	-0.8%	7.2	7.1	-0.1	-0.8%
RO	4.8	4.8	0.0	-0.5%	2.3	2.3	0.0	-0.5%

	FNVA / farm (€ '000)				FNVA / AWU (€ '000)			
	2007	scenario	difference		2007	scenario	difference	
FI	39.6	39.2	-0.4	-0.9%	27.1	26.9	-0.3	-0.9%
SE	57.7	56.9	-0.8	-1.4%	38.4	37.8	-0.6	-1.4%
SK	141.9	140.2	-1.7	-1.2%	8.4	8.3	-0.1	-1.2%
SI	6.8	6.7	-0.1	-1.5%	3.9	3.8	-0.1	-1.5%
UK	100.3	98.9	-1.4	-1.4%	42.4	41.8	-0.6	-1.4%
EU-27	28.5	28.2	-0.3	-1.1%	16.7	16.5	-0.2	-1.1%

Chart 1 . Changes in € in Farm Net Value Added /AWU, by Member States

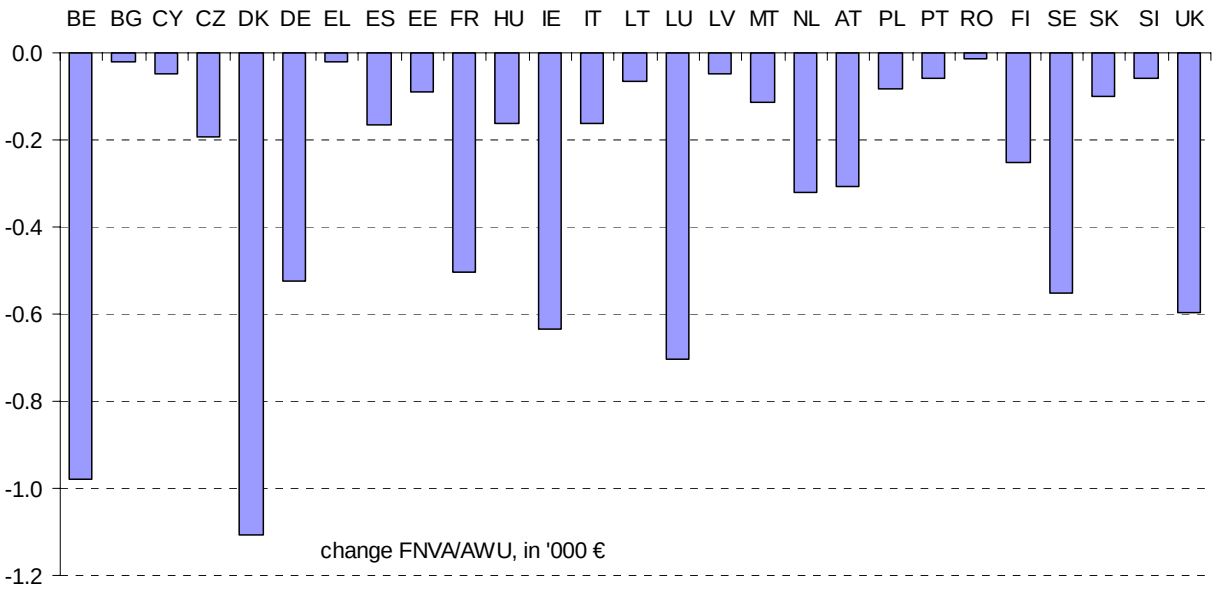


Chart 2 . Relative changes (in %) in Farm Net Value Added/AWU, by Member States

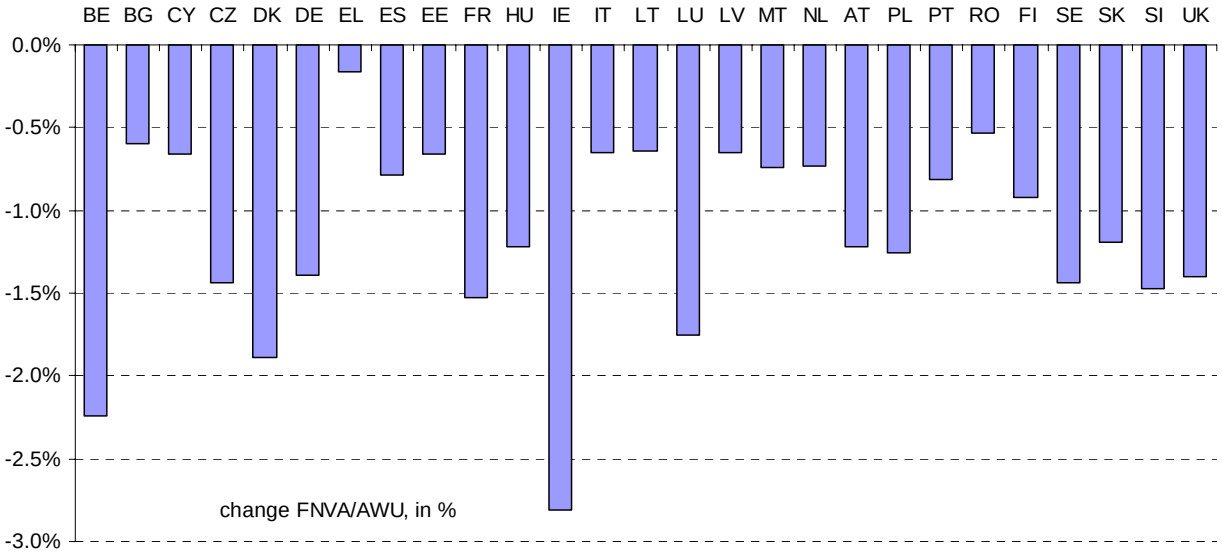


Chart 3. Changes in Farm Net Value Added /AWU, by Types of Farming

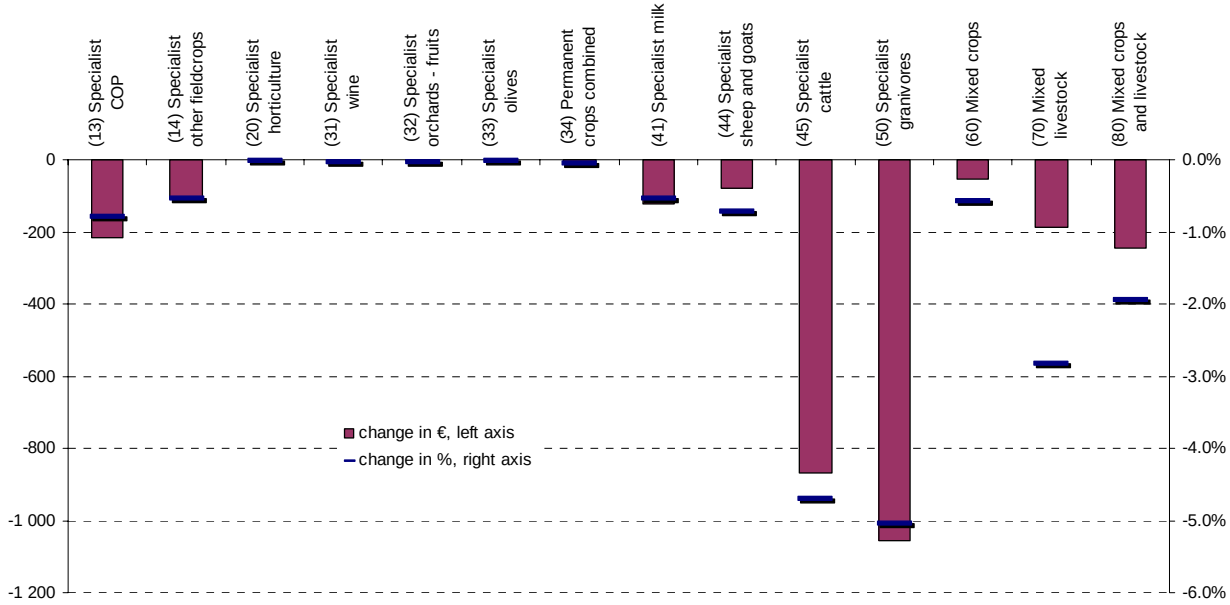


Chart 4 . Changes in Farm Net Value Added /AWU, by grazing livestock classification

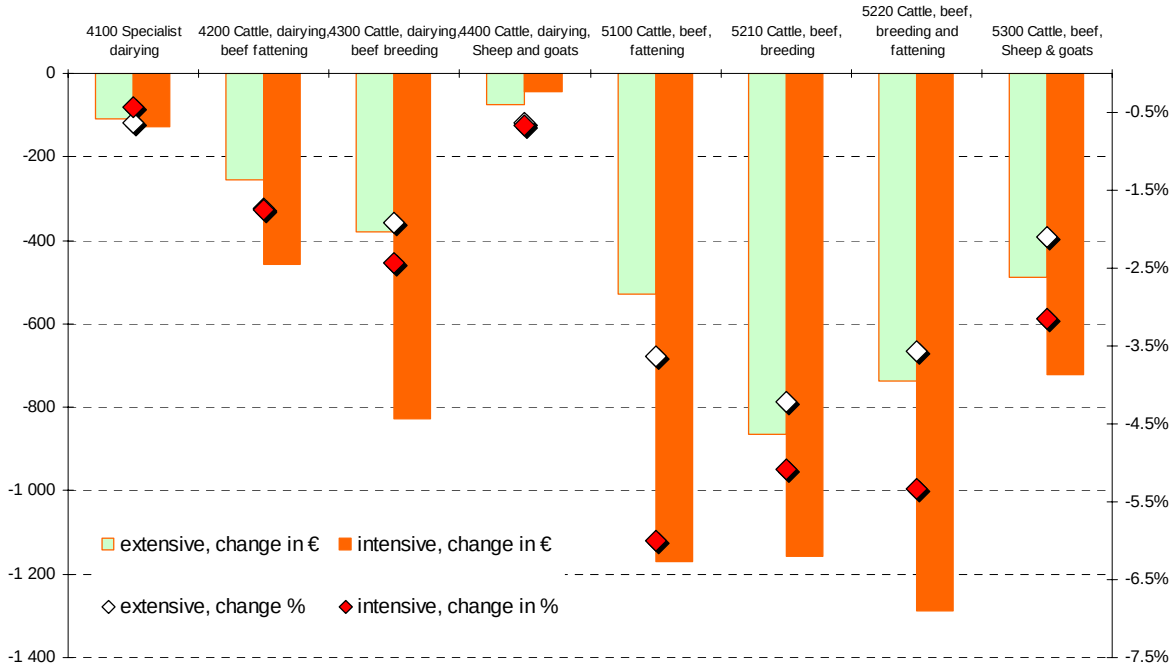
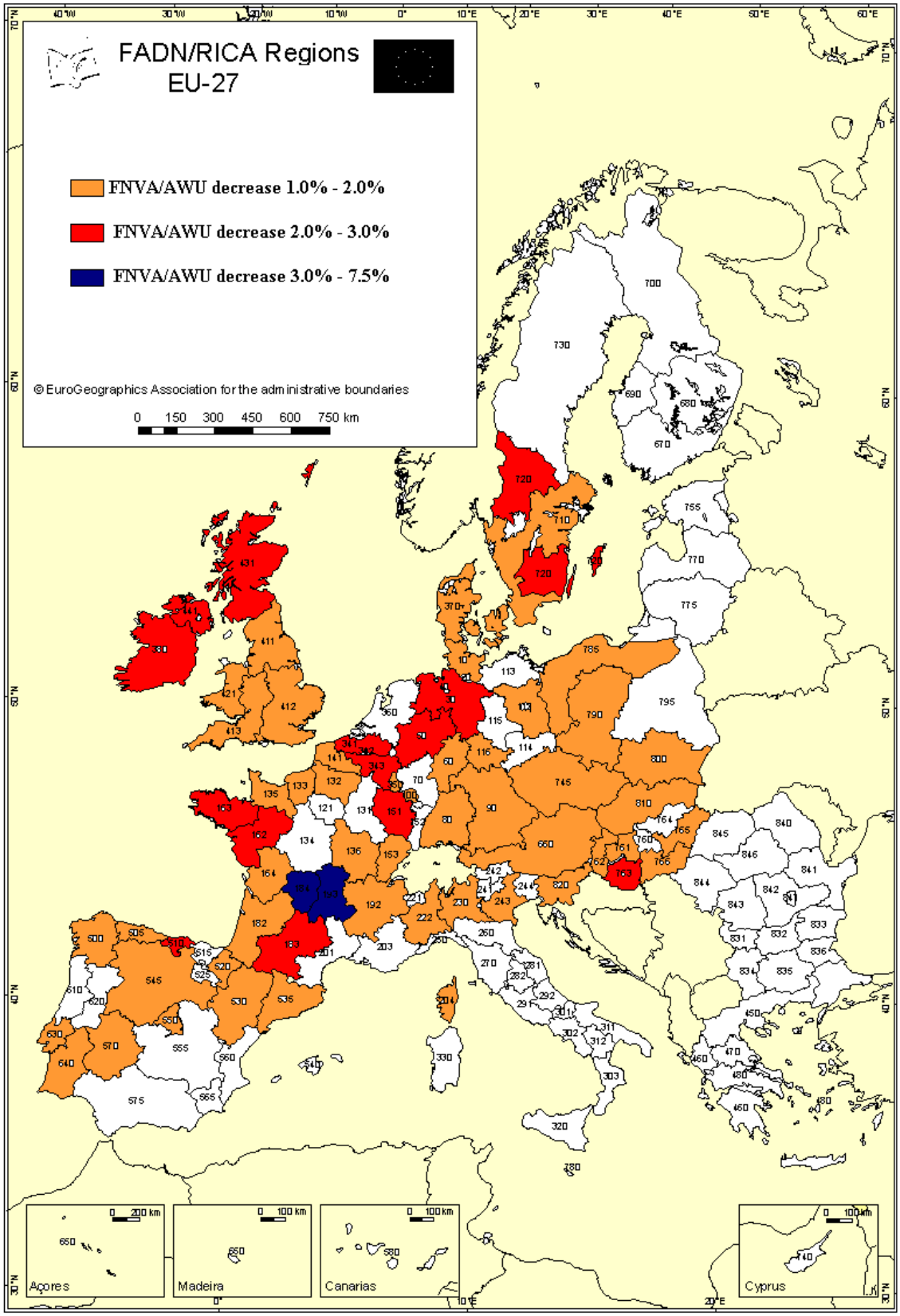


Table 3.Most affected regions – income reduction in terms of Farm Net Value Added /AWU

MS	Region	% decrease of income (FNVA/AWU)
FR	(184) Limousin	-3.0% to -7.5%
FR	(193) Auvergne	
IE	(380) Ireland	-2.0% to -3.0%
FR	(163) Bretagne	
FR	(162) Pays de la Loire	
UK	(441) Northern Ireland	
UK	(431) Scotland	
BE	(343) Wallonie	
DE	(50) Nordrhein-Westfalen	
BE	(341) Vlaanderen	
FR	(183) Midi-Pyrenees	
FR	(151) Lorraine	
HU	(763) Del-Dunantul	
ES	(510) Cantabria	
DE	(30) Niedersachsen	
SE	(720) Skogs-och mellanbygdslan	
ES	(500) Galicia	-1.0% to -2.0%
FR	(135) Basse-Normandie	
DK	(370) Denmark	
FR	(136) Bourgogne	
UK	(421) Wales	
FR	(153) Franche-Comte	
LU	(350) Luxembourg	
ES	(505) Asturias	
ES	(520) Navarra	
PL	(790) Wielkopolska and Slask	
ES	(570) Extremadura	
ES	(530) Aragon	
HU	(761) Kozep-Dunantul	
FR	(133) Haute-Normandie	
DE	(90) Bayern	
PL	(785) Pomorze and Mazury	
FR	(182) Aquitaine	
SI	(820) Slovenia	
CZ	(745) Czech Republic	
DE	(10) Schleswig-Holstein	
IT	(222) Piemonte	
FR	(141) Nord-Pas-de-Calais	
SE	(710) Slattbygdslan	
IT	(230) Lombardia	
PL	(800) Malopolska and Pogorze	
PT	(640) Alentejo e do Algarve	
DE	(100) Saarland	
HU	(762) Nyugat-Dunantul	

UK	(411) England-North	-1.0% to -2.0%
ES	(550) Madrid	
PT	(630) Ribatejo e Oeste	
AT	(660) Austria	
FR	(192) Rhones-Alpes	
SK	(810) Slovakia	
IT	(243) Veneto	
ES	(535) Cataluna	
DE	(60) Hessen	
DE	(80) Baden-Wurttemberg	
UK	(412) England-East	
UK	(413) England-West	
FR	(204) Corse	
ES	(545) Castilla-Leon	
HU	(765) Eszak-Alfold	
HU	(766) Del-Alfold	
DE	(112) Brandenburg	
DE	(116) Thueringen	
FR	(164) Poitou-Charentes	
FR	(132) Picardie	

Chart 5. Most affected regions: income decrease of more than 1.0% FNVA /AWU



3.2. Employment

Application of the price scenario increased the number of farms in the EU with negative Gross Farm Income by 2 700 (0.05% farms). This meant additional 5 000 AWU (0.06% of all 8.7 million AWU) in an immediately unsustainable position. This number is split roughly in half between unpaid and paid AWU. The paid workforce is relatively more affected as there are fewer paid workers than family workforce.

The price scenario increases the number of workforce in farms with negative Economic Profit by over 33 000 AWU or 0.4% AWU in the EU[6]. In this number one job in five would be paid and so even more susceptible for reduction.

Table 4. Share of workforce (% AWU) in farms with unsustainable economic situation

	AWU threatened in the short term			AWU threatened in the long term		
	total	of which		total	of which	
		unpaid	paid		unpaid	paid
In 2007	1.83%	1.76%	2.04%	58.9%	65.4%	38.7%
With the scenario	1.89%	1.80%	2.15%	59.3%	65.8%	39.0%
Effect of the scenario	**+ 0.06%** **(+5 000 AWU)**	+ 0.04% **(+2 600 AWU)**	+ 0.11% **(+ 2 400 AWU)**	**+ 0.4%** **(+33 300AWU)**	+ 0.4% **(+26 600AWU)**	+ 0.3% **(+6 800 AWU)**

Distribution of severity of the scenario's effect on employment depends on a number of factors. First, these are the types of farming and the dependency on the more affected meat production. Then, there are the vulnerability of farms to income reduction and the number of workforce in the vulnerable farms. So the most affected regions exhibit an unfavourable combination of these factors, although not necessarily of all of them at once.

The most affected types of farms are cattle specialists, both in beef and dairy production. Eventually, some 6000-7000 AWU would be affected there. Especially those specialising in intensive rearing of suckling cows would suffer. In relative terms, the order of impact is different, with AWU in granivore (pig and poultry) farms the most hit, followed closely by cattle farms. (see Charts 9-14 & Table 6)

In terms of Less Favoured Areas, the effect is a little higher in LFA than in other areas – on the EU scale the potential AWU losses are 0.42% AWU threatened in LFA and 0.36% in other areas. Again, there is much variation among Member States in this respect. (see Charts 15-16)

Regionally, the negative impact on AWU is most experienced in those regions with much of intensive cattle production, especially in France and Germany, but also in areas of Hungary, UK, Spain and other MS. On the other hand, the largest numbers of affected AWU are to be

[6] The scenario not only had a negative income on farm results – there were also some farms whose income changed from negative to positive figures. The presented results provide thus the net effect of the price scenario. Although the scale of the positive income effect was small in general, it could be visible in certain cases (e.g. those marked by "+effect" in tables 5 and 6).

found in larger and more populous Romanian and Polish regions or in the Czech Republic. (see Tables 5-8)

In the short term Romania is hit most with over 1 300 AWU threatened. It has high employment in agriculture and the affected type of farming there is field cropping. In relative terms, Slovakia and Cyprus stood out with 0.6% AWU endangered immediately, in their pig and poultry farms. Also Hungary, although less affected on average, would see the negative impact concentrated on its cattle production.

In the long term France is the most affected with 7 400 AWU to go, followed by Poland and Germany (4 500 - 5 000 AWU affected). The endangered French jobs would be particularly in cattle, pigs & poultry and milk farms, in Poland in mixed production farms, and in all of those mentioned types of farms in Germany.

In relative terms, Belgian and Czech farm workforce would suffer most in the long-run, with 1.7% and 1.6% of AWU in additional unsustainable farms. In Belgium, AWU mainly in cattle and mixed farms would be affected, while in the Czech Republic the effect would be concentrated in mixed production farms. They would be followed by France, Germany and Luxemburg with 1.0-1.1% of their AWU affected (see Charts 7-8 & Table 5).

4. JOINT EFFECT ON INCOME OF PRICE CHANGES AND A LONG TERM FARM NON-SUSTAINABILITY

In addition to the price changes effect, which brings about a 1.1% decrease in farm incomes in the EU, there could also be an additional effect caused by farms quitting production and thus losing their farming income altogether. If all the farms pushed by the tested price changes scenario into a long-term non-viability stopped all their activities and their workforce were accommodated in other farms, it would reduce the FNVA/AWU from the above -1.1% further to -1.6%. However, these assumptions of the complete loss of production and income in the affected farms and of the entire affected workforce leaving the agriculture have to be treated as an extreme scenario. Most likely the production potential of the quitting farms would deliver income to those overtaking them, and part of the leaving workforce would find employment outside of agriculture. So the actual agricultural income loss by AWU would be within the range -1.1% to -1.6%, under the assumptions made for this analysis. Corresponding results for Member States are presented in Chart 6 below.

Chart 6 . Income / AWU - price change effect & price and farm non-sustainability effect

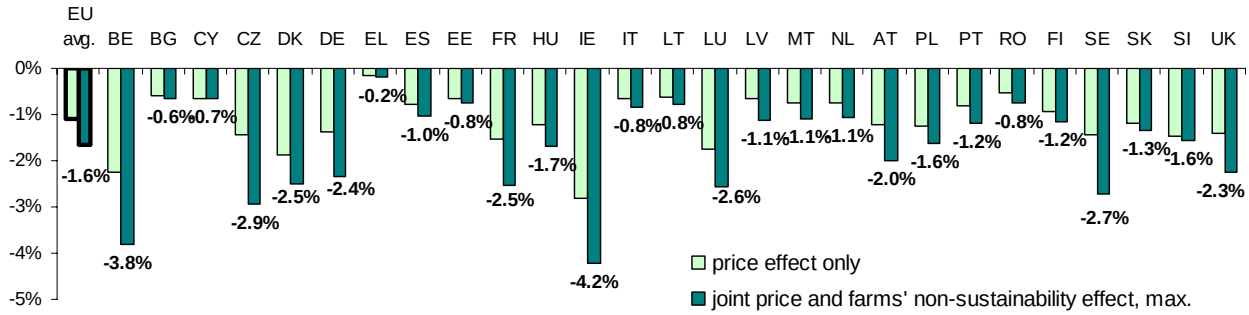


Chart 7 . Number of AWU in farms made economically unsustainable by the scenario, by MS

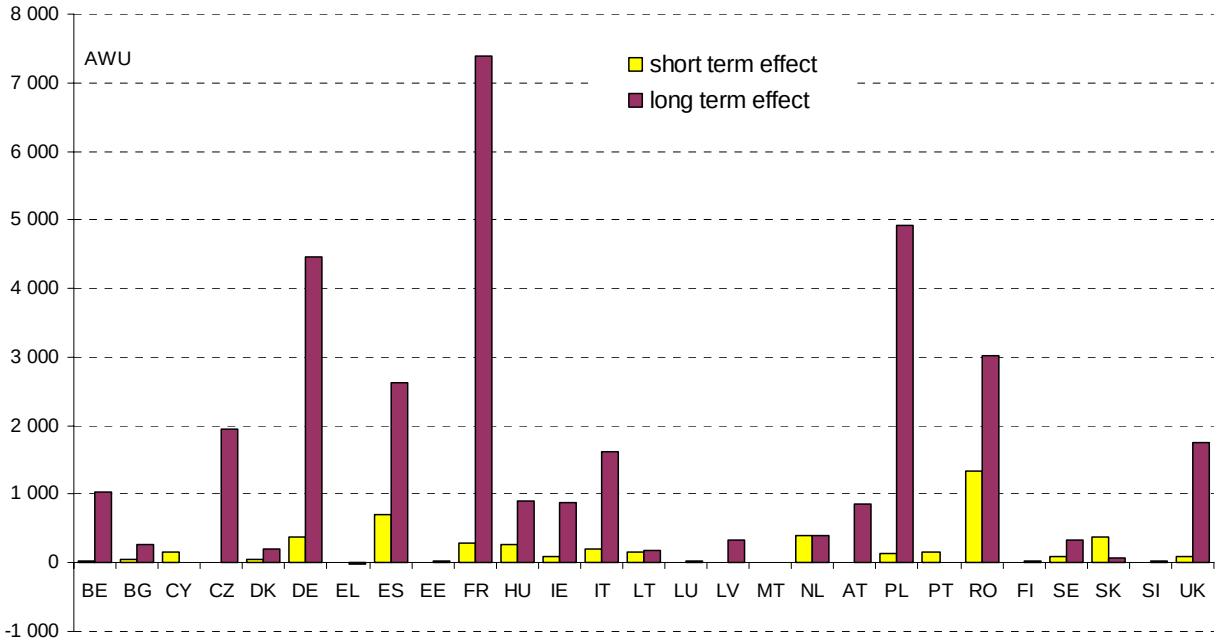


Chart 8 . Shares (%) of AWU in farms made economically unsustainable by the scenario, by MS

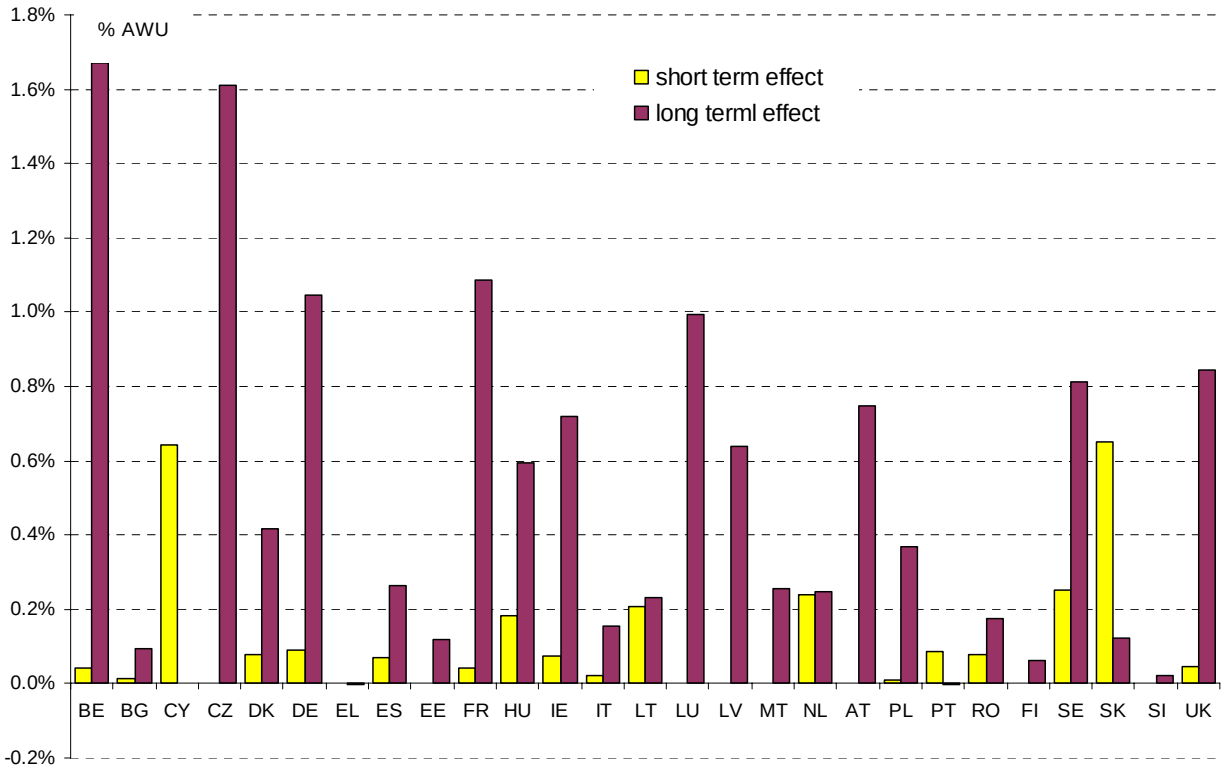


Table 5. Effects of the scenario – AWU in farms made unsustainable by the scenario, by Member States

	Total AWU	of which AWU unpaid	paid	AWU in farms made unsustainable by the scenario - GFI turned negative Total	unpaid	paid	AWU in farms made unsustainable by the scenario - EP turned negative Total	unpaid	paid	% AWU in farms with neg. GFI	% AWU in farms made unsustainable by the scenario - GFI turned negative Total	unpaid	paid	% AWU in farms with neg. EP	% AWU in farms made unsustainable by the scenario - EP turned negative Total	unpaid	paid
BE	62 000	49 000	13 000	<50	<50		1 000	1 000	<50	2%	0.0%	0.1%		39%	1.7%	2.1%	0.0%
BG	283 000	148 000	135 000	<50	+effect	100	300	200	100	8%	0.0%		0.1%	48%	0.1%	0.1%	0.0%
CY	23 000	17 000	7 000	200	<50	100				5%	0.6%	0.1%	2.0%	82%			
CZ	121 000	20 000	101 000				1 900	200	1 700	0%				49%	1.6%	1.2%	1.7%
DK	50 000	27 000	23 000	<50	<50		200	200	<50	7%	0.1%	0.1%		82%	0.4%	0.7%	0.1%
DE	425 000	266 000	159 000	400	400	<50	4 500	3 100	1 400	2%	0.1%	0.1%	0.0%	47%	1.0%	1.2%	0.9%
EL	632 000	562 000	70 000				+effect	<50	+effect	1%				50%		0.0%	
ES	997 000	804 000	193 000	700	700		2 600	2 200	500	2%	0.1%	0.1%		56%	0.3%	0.3%	0.2%
EE	20 000	10 000	10 000				<50	<50		1%				57%	0.1%	0.2%	
FR	680 000	501 000	179 000	300	200	100	7 400	6 800	600	1%	0.0%	0.0%	0.1%	50%	1.1%	1.4%	0.3%
HU	151 000	55 000	96 000	300	<50	200	900	500	400	11%	0.2%	0.1%	0.2%	57%	0.6%	0.9%	0.4%
IE	121 000	113 000	7 000	100	100	<50	900	800	100	3%	0.1%	0.1%	0.1%	80%	0.7%	0.7%	0.7%
IT	1 050 000	788 000	262 000	200	200		1 600	1 200	400	1%	0.0%	0.0%		67%	0.2%	0.2%	0.2%
LT	79 000	61 000	18 000	200	200		200	200	<50	0%	0.2%	0.3%		48%	0.2%	0.3%	0.0%
LU	3 000	2 000	<1000				<50	<50						41%	1.0%	1.2%	
LV	53 000	33 000	19 000				300	100	300	2%				59%	0.6%	0.2%	1.3%
MT	3 000	2 000	<1000				<50	<50	<50	3%				60%	0.3%	0.1%	0.8%
NL	163 000	85 000	78 000	400	300	100	400	300	100	8%	0.2%	0.4%	0.1%	61%	0.2%	0.3%	0.2%
AT	116 000	107 000	8 000				900	800	<50	1%				54%	0.7%	0.8%	0.5%
PL	1 329 000	1 146 000	184 000	100	300	+effect	4 900	4 800	100	0%	0.0%	0.0%		67%	0.4%	0.4%	0.1%
PT	176 000	147 000	29 000	100	<50	100	+effect	200	+effect	2%	0.1%	0.0%	0.5%	77%		0.1%	
RO	1 729 000	1 376 000	353 000	1 300		1 300	3 000	2 900	100	3%	0.1%		0.4%	78%	0.2%	0.2%	0.0%
FI	59 000	49 000	10 000				<50	<50	<50	0%				68%	0.1%	0.1%	0.0%
SE	40 000	30 000	9 000	100	100	<50	300	200	100	3%	0.3%	0.2%	0.3%	77%	0.8%	0.8%	0.9%
SK	59 000	4 000	54 000	400		400	100	<50	100	2%	0.7%		0.7%	47%	0.1%	0.4%	0.1%
SI	72 000	68 000	3 000				<50	<50	+effect	8%				84%	0.0%	0.0%	
UK	208 000	115 000	93 000	100	100	<50	1 800	800	900	2%	0.0%	0.1%	0.0%	61%	0.8%	0.7%	1.0%
EU 27	8 703 000	6 587 000	2 116 000	5 000	3 000	2 000	33 000	27 000	7 000	2%	0.1%	0.0%	0.1%	63%	0.4%	0.4%	0.3%

NB: Figures are presented rounded and thus the totals may not add up.

Chart 9. Number of AWU in farms made economically unsustainable by the scenario, by TF 14

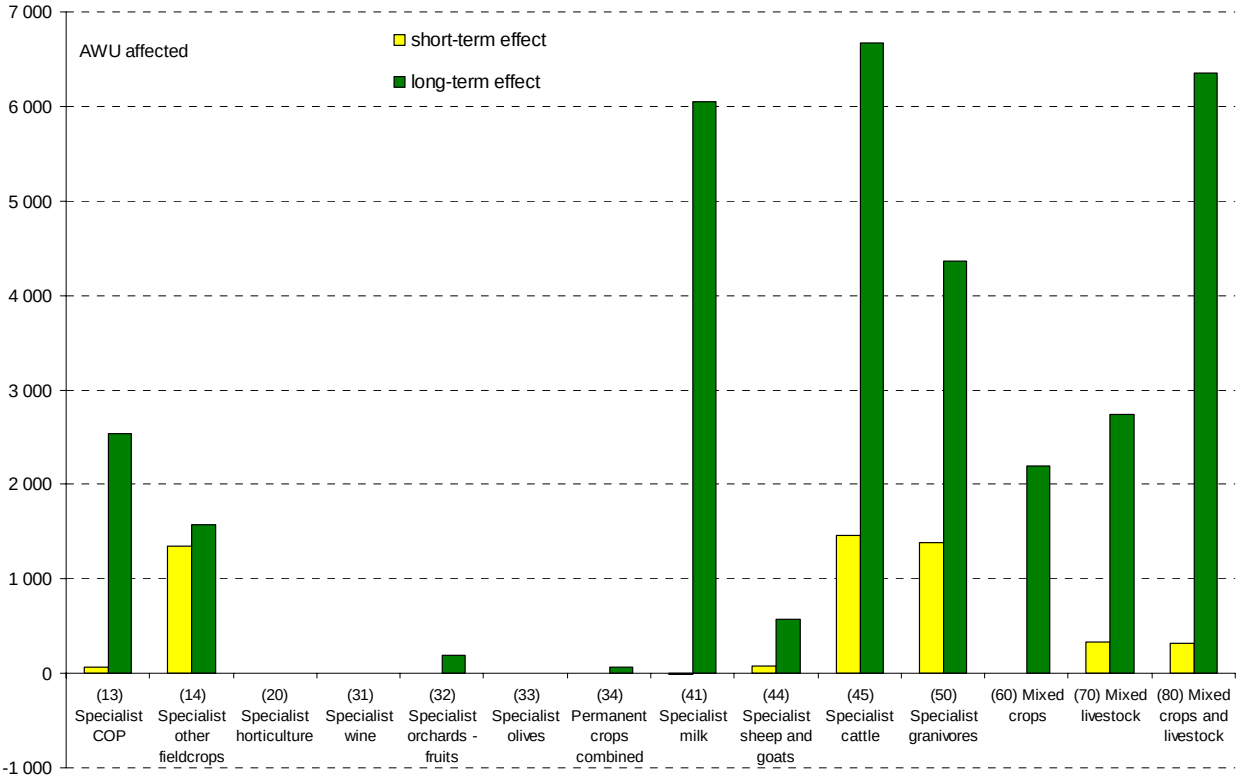


Chart 10 . Shares (%) of AWU in farms of made economically unsustainable by the scenario, by TF14

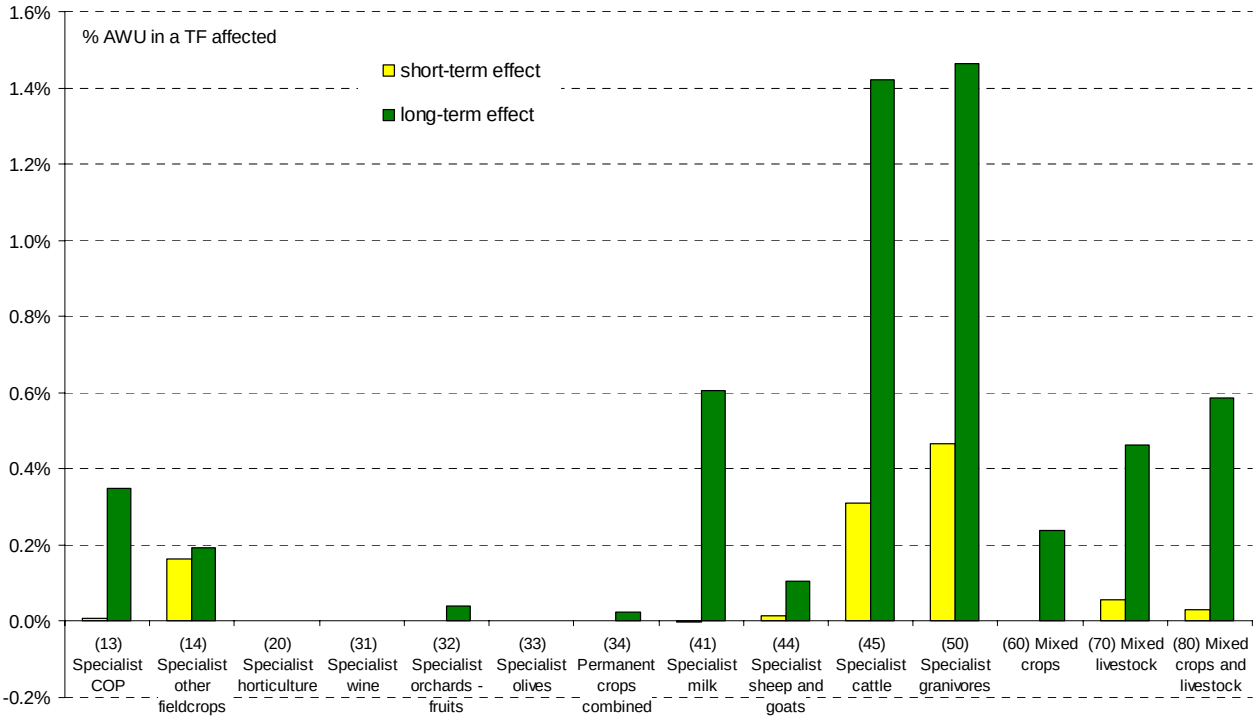


Table 6. Effects of the scenario – AWU in farms made unsustainable by the scenario, by Types of Farming

	Total AWU	of which AWU		AWU in farms made unsustainable by the price scenario						% of AWU in farms made unsustainable by the scenario					
				where GFI turned negative			where EP turned negative			where GFI turned negative			where EP turned negative		
		unpaid	paid	Total	unpaid	paid	Total	unpaid	paid	Total	unpaid	paid	Total	unpaid	paid
(13) Specialist COP	728 000	500 000	228 000	100	100		2 500	2 100	400	0.0%	0.0%		0.3%	0.4%	0.2%
(14) Specialist other fieldcrops	817 000	543 000	274 000	1 300	<50	1 300	1 600	1 200	400	0.2%	0.0%	0.5%	0.2%	0.2%	0.1%
(20) Specialist horticulture	557 000	251 000	306 000				<50	<50	<50				0.0%	0.0%	0.0%
(31) Specialist wine	445 000	268 000	177 000												
(32) Specialist orchards - fruits	474 000	323 000	151 000				200	200	<50				0.0%	0.1%	0.0%
(33) Specialist olives	494 000	410 000	84 000												
(34) Permanent crops combined	277 000	198 000	79 000				100	<50	<50				0.0%	0.0%	0.0%
(41) Specialist milk	1 001 000	867 000	134 000	+effect	<50	+effect	6 000	5 800	200	0.0%	0.0%	0.0%	0.6%	0.7%	0.2%
(44) Specialist sheep and goats	549 000	457 000	92 000	100	100		600	500	100	0.0%	0.0%		0.1%	0.1%	0.1%
(45) Specialist cattle	469 000	426 000	43 000	1 500	1 200	200	6 700	6 000	600	0.3%	0.3%	0.5%	1.4%	1.4%	1.4%
(50) Specialist granivores	298 000	196 000	101 000	1 400	500	900	4 400	2 800	1 500	0.5%	0.3%	0.9%	1.5%	1.4%	1.5%
(60) Mixed crops	919 000	719 000	200 000				2 200	1 200	1 000				0.2%	0.2%	0.5%
(70) Mixed livestock	591 000	551 000	41 000	300	300		2 700	2 300	400	0.1%	0.1%		0.5%	0.4%	1.0%
(80) Mixed crops and livestock	1 085 000	879 000	205 000	300	300	<50	6 400	4 300	2 100	0.0%	0.0%	0.0%	0.6%	0.5%	1.0%
Average all types of farming	8 703 000	6 587 000	2 116 000	5 000	2 600	2 400	33 300	26 600	6 700	0.1%	0.0%	0.1%	0.4%	0.4%	0.3%

NB: Figures are presented rounded and thus the totals may not add up.

Chart 11. Number of AWU in farms made economically unsustainable by the scenario in farms with cattle, by grazing livestock (GLS) classification[7]

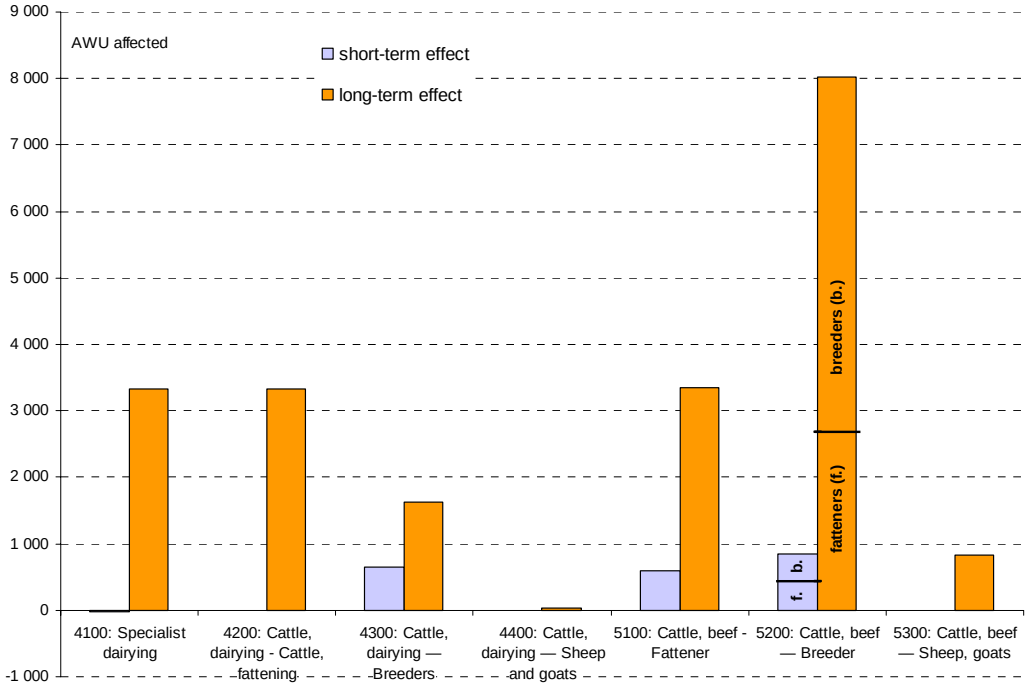
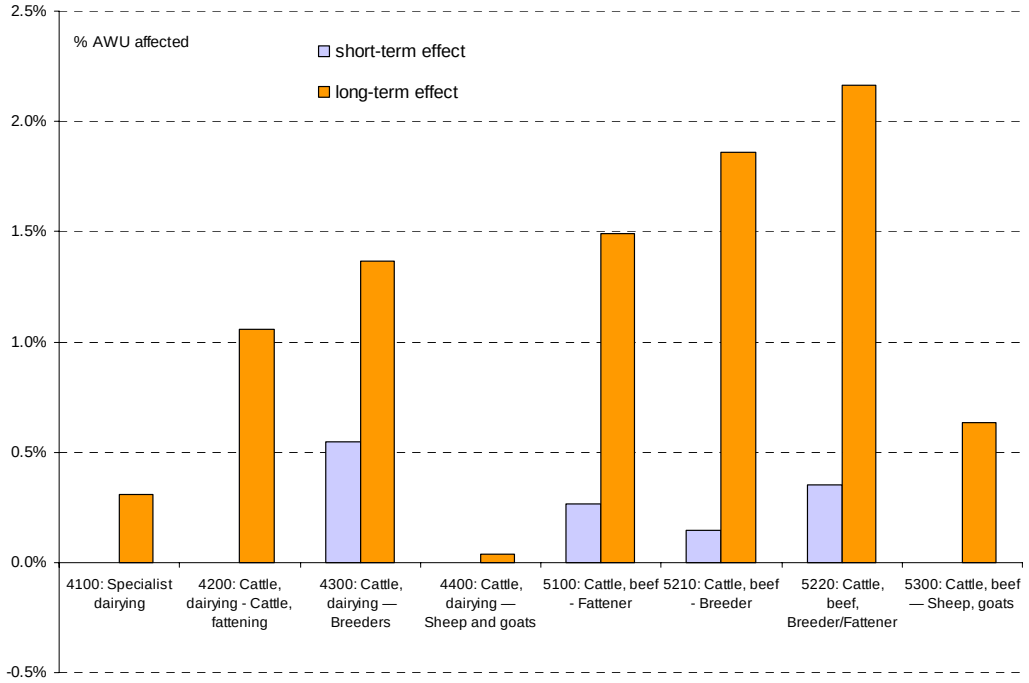


Chart 12. Shares (%) of AWU in farms of made economically unsustainable by the scenario in farms with cattle, by GLS classification



[7] The Grazing Livestock Systems (GLS) typology is based on composition of grazing livestock present on farms, but not on the level of specialisation in gazing livestock production. Grazing livestock farms are divided into classes on the basis of their production (milk, meat), composition of the breeding herd (dairy cows, suckler cows) and the categories of animals (calves, young cattle, steers).

Chart 13. Number of AWU in farms made economically unsustainable in farms with cattle, by GLS classification and grazing intensity

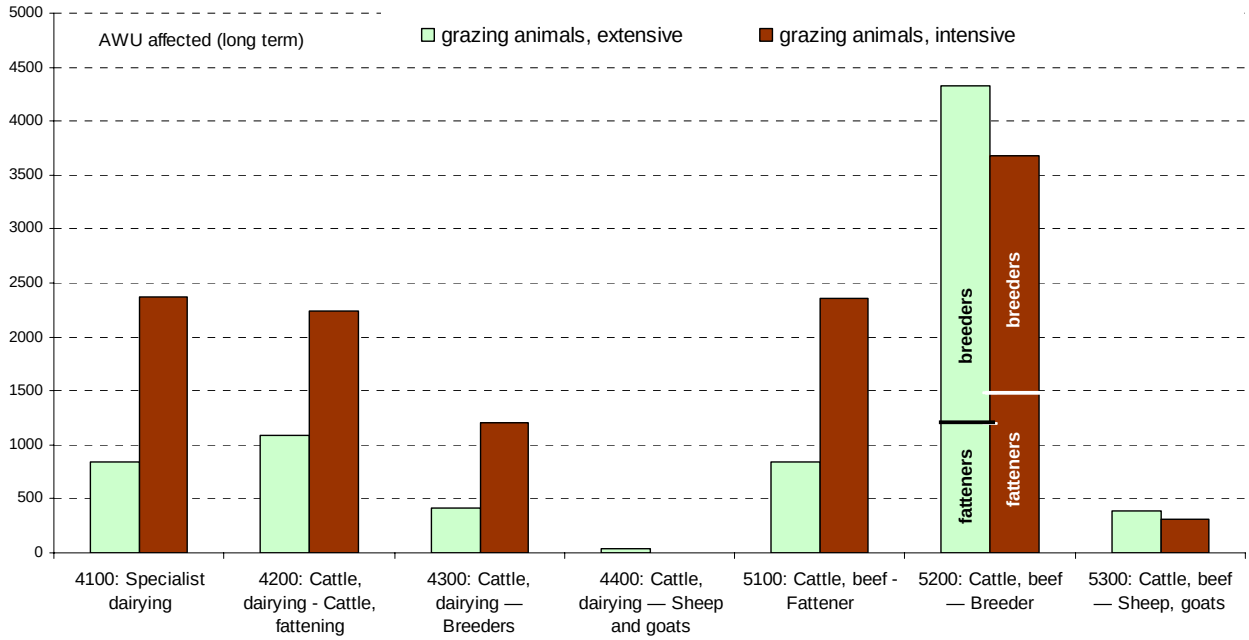


Chart 14. Shares (%) of AWU in farms of made economically unsustainable in farms with cattle, by GLS classification and grazing intensity

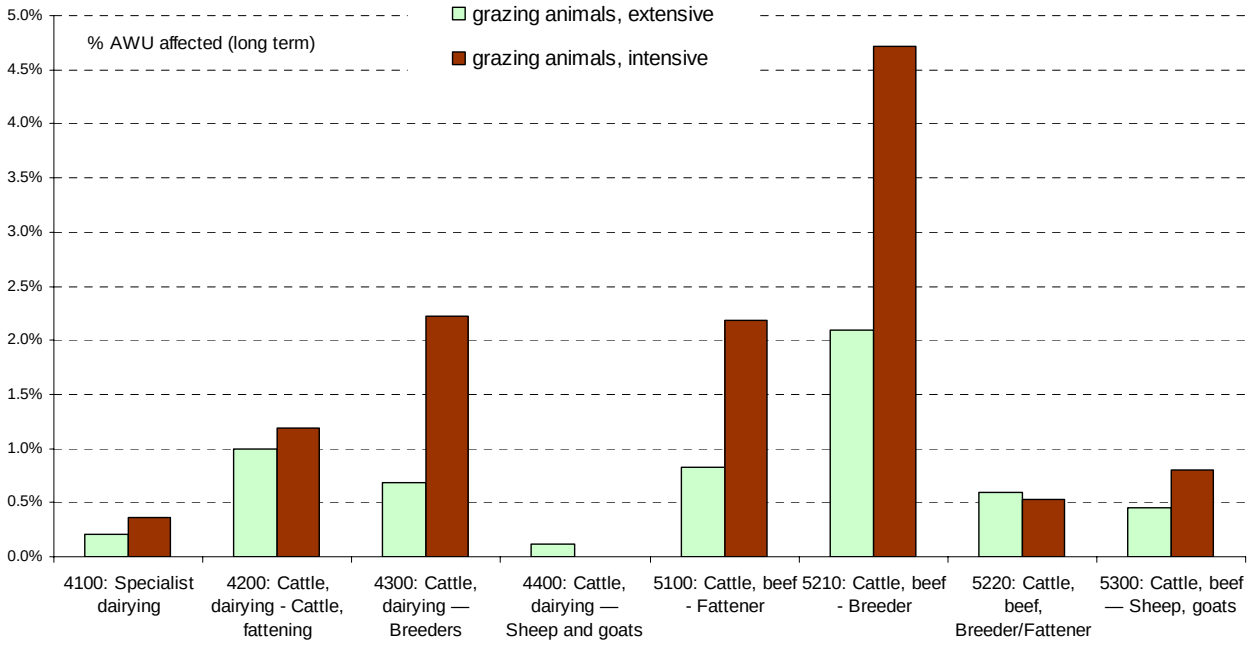


Chart 15. Number of AWU in farms made economically unsustainable, by LFA / other areas

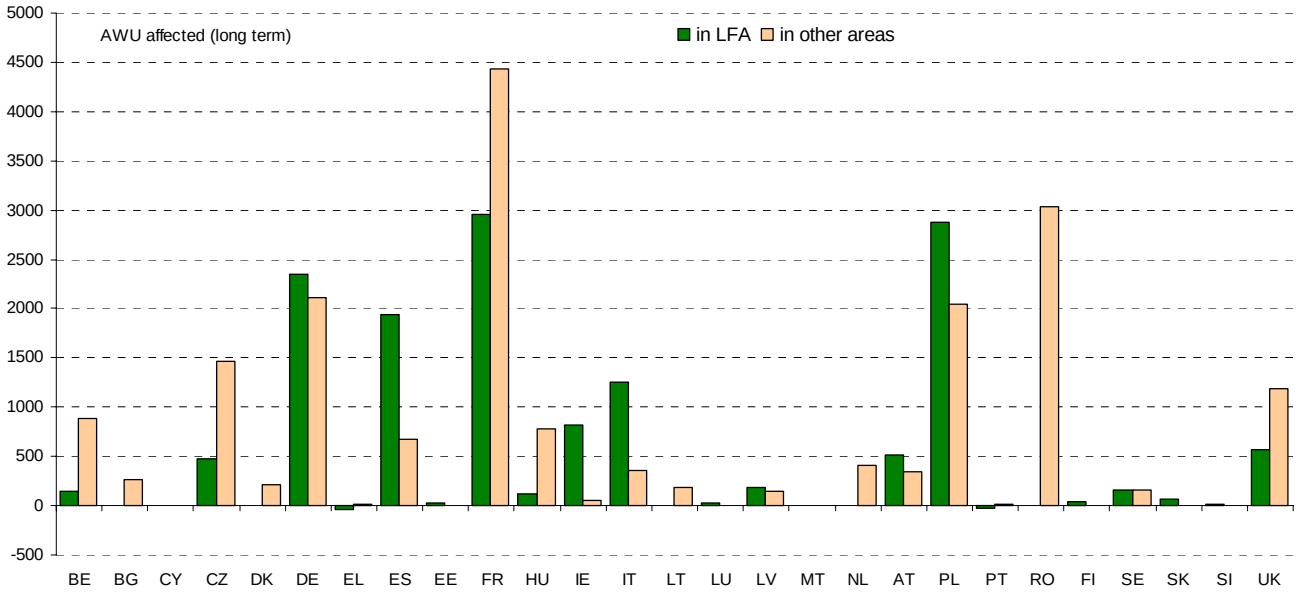
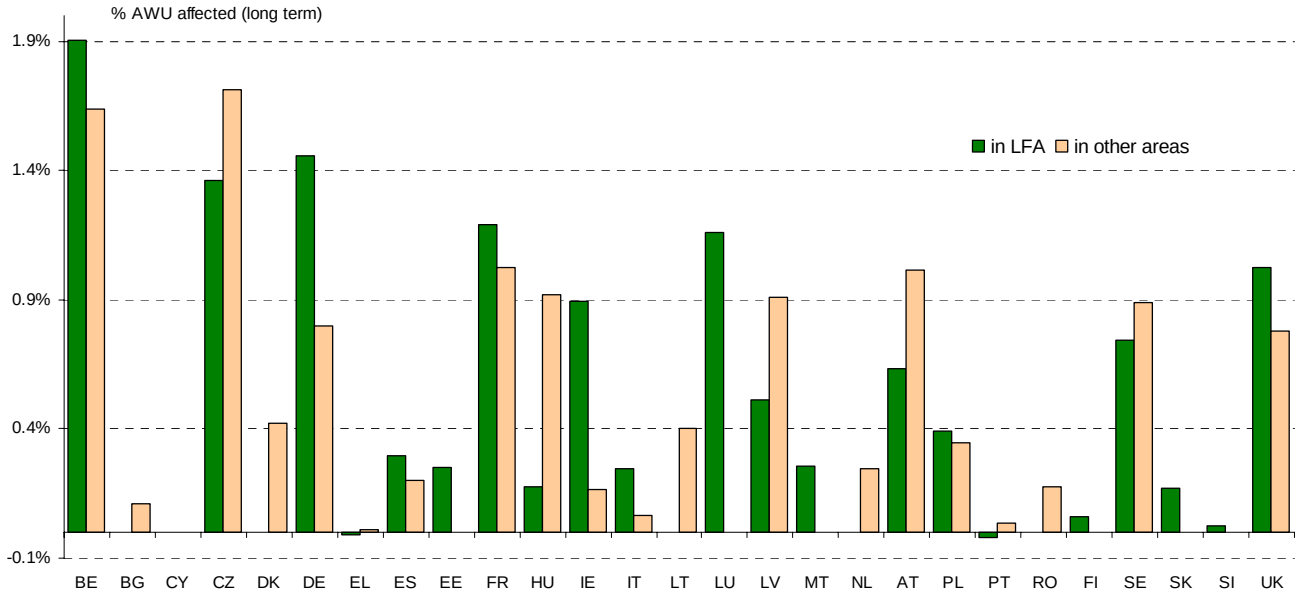


Chart 16. Shares (%) of AWU in farms of made economically unsustainable, by LFA / other areas



Most affected regions in the short term

Table 7. In absolute terms: > 200 AWU in farms of the region made unsustainable.

MS	Region	AWU made unsustainable in each region
RO	(846) Centru	1000 to 1500
ES	(540) Baleares	500 to 1000
NL	(360) The Netherlands	200 to 500
SK	(810) Slovakia	
PL	(790) Wielkopolska and Slask	
PL	(785) Pomorze and Mazury	
HU	(763) Del-Dunantul	

Table 8. In relative terms: > 0.5% AWU in farms of the region made unsustainable.

MS	Region	% AWU made unsustainable in each region
ES	(540) Baleares	6%
HU	(763) Del-Dunantul	1%
RO	(846) Centru	0.5% to 1.0%
FR	(184) Limousin	
SK	(810) Slovakia	
CY	(740) Cyprus	
PT	(630) Ribatejo e Oeste	
SE	(720) Skogs-och mellanbygdslan	

Most affected regions – the long term

Table 9. In absolute terms: > 200 AWU in farms in the region made unsustainable.

MS	Region	AWU made unsustainable in each region
RO	(845) Nord-Vest	2000 to 3000
PL	(795) Mazowsze and Podlasie	
CZ	(745) Czech Republic	1000 to 2000
PL	(790) Wielkopolska and Slask	
FR	(162) Pays de la Loire	
UK	(412) England-East	
DE	(30) Niedersachsen	
FR	(183) Midi-Pyrenees	
DE	(90) Bayern	200 to 1000
IE	(380) Ireland	
AT	(660) Austria	
BE	(341) Vlaanderen	
ES	(500) Galicia	
FR	(182) Aquitaine	
FR	(163) Bretagne	
FR	(135) Basse-Normandie	
DE	(112) Brandenburg	
ES	(545) Castilla-Leon	
IT	(243) Veneto	
DE	(50) Nordrhein-Westfalen	
FR	(184) Limousin	
HU	(763) Del-Dunantul	
FR	(164) Poitou-Charentes	
NL	(360) The Netherlands	
DE	(60) Hessen	
FR	(132) Picardie	
FR	(193) Auvergne	
PT	(630) Ribatejo e Oeste	
LV	(770) Latvia	
PL	(800) Malopolska and Pogorze	
HU	(762) Nyugat-Dunantul	
BE	(343) Wallonie	
FR	(131) Champagne-Ardenne	

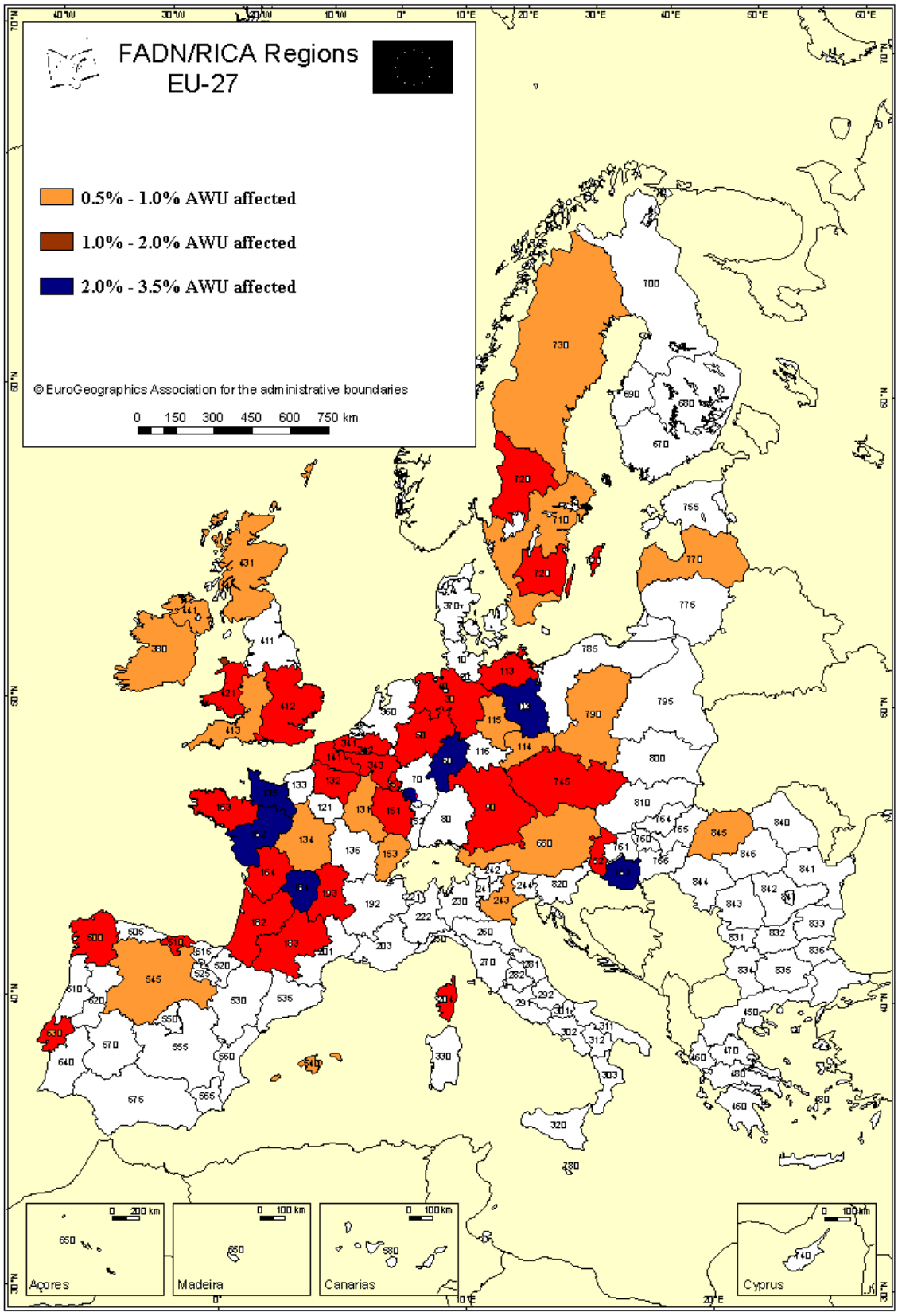
UK	(413) England-West	200 to 1000
PL	(785) Pomorze and Mazury	
ES	(555) Castilla-La Mancha	
IT	(260) Emilia-Romagna	
IT	(320) Sicilia	
FR	(134) Centre	
FR	(141) Nord-Pas-de-Calais	
ES	(535) Cataluna	
DK	(370) Denmark	

Table 10. In relative terms: > 0.5% AWU in farms in the region made unsustainable.

MS	Region	AWU made unsustainable in each region
FR	(184) Limousin	2.5% to 3.5%
DE	(112) Brandenburg	
HU	(763) Del-Dunantul	2.0% to 2.5%
FR	(135) Basse-Normandie	
DE	(100) Saarland	
FR	(162) Pays de la Loire	
DE	(60) Hessen	
ES	(510) Cantabria	1.5% to 2.0%
FR	(132) Picardie	
HU	(762) Nyugat-Dunantul	
FR	(183) Midi-Pyrenees	
DE	(30) Niedersachsen	
UK	(412) England-East	
BE	(343) Wallonie	
BE	(341) Vlaanderen	
CZ	(745) Czech Republic	
FR	(164) Poitou-Charentes	1.0% to 1.5%
FR	(193) Auvergne	
PT	(630) Ribatejo e Oeste	
FR	(151) Lorraine	
ES	(500) Galicia	
UK	(421) Wales	
FR	(163) Bretagne	

DE	(50) Nordrhein-Westfalen	1.0% to 1.5%
SE	(720) Skogs-och mellanbygdslan	
FR	(141) Nord-Pas-de-Calais	
DE	(113) Mecklenburg-Vorpommern	
FR	(182) Aquitaine	
FR	(204) Corse	
DE	(90) Bayern	
LU	(350) Luxembourg	
ES	(540) Baleares	0.5% to 1.0%
ES	(545) Castilla-Leon	
RO	(845) Nord-Vest	
UK	(431) Scotland	
SE	(730) Lan i norra	
AT	(660) Austria	
SE	(710) Slattbygdslan	
FR	(131) Champagne-Ardenne	
IE	(380) Ireland	
LV	(770) Latvia	
FR	(134) Centre	
DE	(115) Sachsen-Anhalt	
FR	(153) Franche-Comte	
IT	(243) Veneto	
UK	(413) England-West	
DE	(114) Sachsen	
PL	(790) Wielkopolska and Slask	
UK	(441) Northern Ireland	

Chart 17. Most affected regions in the long term: > 0.5% AWU in farms in the region made unsustainable.



Annex: Methodology for the microeconomic analysis

The effect of price changes on Gross Farm Income[8] (GFI) and farm Economic Profit[9] (EP) are studied. Farms pushed by the price changes into negative values of GFI and EP are regarded as put into an unsustainable economic situation in the short term (GFI) and long term (EP). Each year, there are farms with negative GFI and EP – this is regarded as a status quo situation. Only those additional farms for which GFI or EP become negative as a result of price changes are treated as those significantly affected by the price changes and thus the focus of this analysis.

The sum of AWU in the additional farms in the unsustainable economic situation gives a measure of workforce potentially affected. In addition, the sum of AWU can be split into unpaid and paid AWU, with the assumption that paid AWU would be first to be reduced.

The results are presented by Member States, types of farming, FADN regions, LFA, grazing livestock typology, etc.

The impacts in terms of price variations provided by the Aglink simulations are the following[10]:

Table 11.

Difference (%)	Wheat	Coarse grains *	Milk	Sugar	Beef	Pork	Chicken	Oilseeds
production	0.0%	-0.1%	-0.6%	-1.5%	-2.8%	-0.6%	-2.0%	0.1%
price	-0.7%	-0.7%	0.3%	-0.2%	-4.8%	-1.8%	-2.0%	0.4%
market receipts=(price*production)	-0.7%	-0.7%	-0.3%	-1.7%	-7.5%	-2.4%	-4.0%	0.4%

** Coarse grains = cereals other than wheat or rice.*

Of these, price changes are a leading factor resulting in production and market receipts changes. For that reason, the price changes scenario is taken for the analysis of the effect on FADN data.

The effect of the above price changes on the production is contained and analysed in the joint effect on income of price changes and a long term farm non-sustainability.

Assumptions for the analysis:

1. Only price change effects are estimated, all other things held constant.

2. Prices of processed dairy products produced on farms are not affected.

3. Sheep milk or goat milk prices are not affected.

[8] Gross Farm Income = total output – total intermediate consumption + balance of current subsidies & taxes

[9] Economic Profit = all farm output and subsidies – all farm costs (including imputed costs of own factors)

[10] The Aglink model also calculated figures for dairy products (butter, SMP, WMP, cheese) and ethanol. However, since these processed products are not directly followed in FADN and the raw materials for them are largely the products taken for the analysis, it was not possible or indeed necessary to analyse these data directly.

4. Seed costs are not affected.

5. Only the variables existing in the FADN database can be used for the simulation.

6. Products affected in the FADN database: (farm outputs) cereals except rice, cow milk, sugar beet, cattle, pigs, poultry, oilseeds, (inputs) purchased feedstuffs, purchased cattle, pigs and poultry.

7. Chicken meat price changes are applied to all poultry prices.

8. Sales and purchases only of relevant products are affected.

9. For outputs, price changes are imposed in full, except in 50% for durum wheat.

10. For inputs, 50% of price change of "coarse grains" is applied to the price of purchased feedstuffs, and the price changes of beef, pork and chicken are applied in full to the prices of purchased cattle, pigs and poultry, respectively.

Also, the modelled price changes are rather small (by less than 1% in most cases). This combined with many dimensions analysed and a relatively small size of the FADN survey produces results based on few sample farms in cases. Validity of those results would then be difficult to ascertain.