

ASSESSMENT OF SUPPORT FOR FARMS IN THE CZECH LESS FAVOURED AREAS WITH SPECIAL REGARDS TO CATTLE BREEDING

Tomáš Doucha, Marie Štolbová, Michaela Lekešová¹

Received 18 January 2012; Accepted 23 March 2012

Abstract: The article presents an impact analysis of the current agricultural policy on the economy of farms in the Czech less favoured areas (LFAs) and on environment and employment in these areas. A multi-criteria impact assessment shows that under the Czech conditions for supports in the LFAs the economic situation of larger extensive farms, measured by the farm net value added per one annual working unit, is very good even in comparison with farms in the regions with the best natural conditions and out of the LFAs. On the other hand, these farms - with an extensive cattle breeding as usually - operate with very low labour inputs and they realise inadequate rents. A decrease or elimination of the rents is possible by changes in conditions for LFA supports, for example by a degresivity of rates and/or by a capping of the supports, or by the distribution of the LFA payments on the whole area of eligible agricultural land.

Key words: agricultural policy, less favoured areas, farm economy, employment, environment.

Anotace: Článek analyzuje dopad současné zemědělské politiky na ekonomiku farem v méně příznivých oblastech (LFA) české republiky. Hodnotí rovněž dopad na životní prostředí a zaměstnanost v těchto oblastech. Multikriteriální hodnocení ukazuje, že za současných podmínek pro podporu méně příznivých podmínek dosahují velké, extenzivně hospodařící farmy velmi dobrých ekonomických výsledků, měřeno dosaženou čistou přidanou hodnotou na roční pracovní jednotku, dokonce i ve srovnání s farmami v nejlepších přírodních podmínkách. Na druhé straně tyto farmy - většinou zaměřené na extenzivní chov skotu - zaměstnávají minimum pracovníků a dosahují neadekvátní důchod. Snížení tohoto důchodu je možné změnami v poskytování podpor LFA, například degresivitou sazeb nebo zastopováním plateb a poskytováním plateb na celou výměru zemědělské půdy v LFA.

Klíčová slova: zemědělská politika, méně příznivé oblasti, podniková ekonomika, zaměstnanost, životní prostředí.

¹ Institute of Agricultural Economics and Information, Mánesova 75, 120 56 Prague 2, Czech Republic; Doc. Ing. Tomáš Doucha, CSc., e-mail doucha.tomas@uzei.cz; Ing. Marie Štolbová, CSc., e-mail stolbova.marie@uzei.cz, Ing. Michaela Lekešová, e-mail lekesova.michaela@uzei.cz

1. Introduction

The Common Agricultural Policy (CAP) justifies supports to agriculture as a reward for the provision of public goods associated with environment (land, water, biodiversity, landscape) and with economic and social activities of agricultural holdings. The EU Commission underlines that the reform of the CAP must also continue, to promote greater competitiveness, efficient use of taxpayer resources and effective public policy returns European citizens expect (European Commission 2010a).

Studies on the agriculture and public goods production stress the role of the less-favoured areas (LFA). Well managed agricultural landscapes have not only high eco-system values; with their scenic and recreation feature they are a key asset for other businesses, such as the tourism (Cooper et al., 2006; European Commission 2009).

The need to preserve and continue in farming in areas characterized by unfavourable natural conditions emerged early after the establishment of the CAP. Council Directive 75/268/EEC on the mountain and hill farming and the farming in certain less-favoured areas was adopted. This directive laid down three basic types of the LFAs: mountain areas, other LFAs and areas threatened by depopulation, where it is essential for conservation of the landscape and areas affected by specific handicaps. Compensatory allowances were calculated in the relation to livestock numbers or to the total forage area of a farm. The allowances were not allowed to exceed 50 units (head of cattle or hectares). These eligibility criteria led in some cases to grazing pressure and overgrazing often resulted in environmental degradation (Crabtree et al. 2003a, 2003b).

The payments were redistributed per hectare of the whole agricultural area of a farm in 2000 according to Council Regulation (EC) No 1257/1999, shifting support away from farms with higher stocking rates. No capping of LFA payment was introduced.

The current Czech LFAs are defined according to the above mentioned Council Regulation. The production of public goods (including the quality of environment and landscape, the value of rural structures, amenities and employment) belongs to the core objectives of the LFA measure. Under the most recent Council Regulation (EC) No 1698/2005 the purpose of the LFA measure is to contribute to maintaining the countryside, through the continued use of agricultural land, and also to maintain and promote sustainable farming systems.

The LFA payments shall compensate on farms in these areas their lower incomes compared with farms in better natural conditions outside of LFAs and thus also eliminate the risks related to the abandonment of agricultural land and the reduction of rural employment. Future rules regarding the definition of the payments will put greater responsibility on the national authorities compared to the previous system, in which the legal requirements aimed at an effective contribution to compensation for existing handicaps, but to avoid overcompensation (European Commission 2008).

All supports to farms, including the LFA payments, should be considered as payments of taxpayers for public goods/services provided by farms to the society. Contrary to private goods (milk, wheat, etc.), the market for public goods is substituted by a „quasi-market“, that is by negotiations of demand, supply and prices among stakeholders. However, the negotiations take usually their course under an information asymmetry, particularly as regards final consumers - taxpayers.

Public goods provided by farms are largely produced jointly with the production of private goods. A social price for one unit of public goods shall reflect – as a rule – costs on their provision, it means higher costs and/or lower incomes related to the production of joined private goods.

As usual, this “price” for public goods is defined on the level of a country/regional area payments (per one ha of the eligible agricultural land), even though with a possible differentiation according to natural and other conditions. However, such approach can lead to effects, that for many farms the “price” does not correspond to the social costs. On the other hand for many farms the relations can be quite opposite. It is because of the fact, that also in

the production of the majority of public goods the economy of scale is functioning, enabling to receive net rent effects on large and good managed farms.

The setting of “prices” for public goods by their tailoring to individual conditions of farms or even land parcels could be an ideal solution from the point of view of the effectiveness of the public financial sources. Such approach, recommended by economists, is in the EU occasionally applied², however, it is administratively very sophisticated. From this reason, policy makers are usually satisfied with flat rate payments, influenced by lobby pressures of the stakeholders.

The LFA payments represent in the framework of the EU Common Agricultural Policy (CAP) specific supports with the aim to prevent in the European marginal areas the land abandonment, to maintain here the land (and landscape) in a proper way. To prevent the land abandonment, a sustainable farming and viable farms are necessary to survive in the marginal areas, contributing also to job opportunities in these areas. Nevertheless, contrary to Czech natural and climatic conditions as a whole, the inadequate high share of arable land in the total acreage of agricultural land has remained as a heritage of the socialistic regime. At the early ninetieth of the last century the share of arable land amounted to 40% of the utilised agricultural area (UAA) in the mountain areas and to 67% in the foothill areas. The total share of arable land in the Czech UAA exceeds 70% at present. This is why the European goals related to the LFA payments have been broadened under the Czech conditions to stimulate in the LFAs the conversion of arable land into pastoral grassland (further only grassland) and the conversion of intensive farm practises into more extensive (low-input) ones. It is a unique approach among EU countries (Štolbová et al. 2007, Štolbová, Hlavsa, Lekešová 2010, Cooper et al. 2006).

The article deals to what extent the goals for the LFA supports in the Czech agriculture and especially after EU accession in 2004 have been fulfilled, whether the distribution of supports is properly oriented and the public financial sources effectively spent, considering also the size structure of farms in LFAs. In the conclusion, possible changes in the LFA supports, which could issue in a higher effectiveness of the public financial sources, are discussed.

The article is connected with analyses of the economic situation of the Czech farms, including the LFA farms, presented in 2009. The economy of farms in LFAs is closely linked with the economy of ruminants. Links of supports for livestock with the economy of the Czech LFA farms is outlined also in Kvapilík (2011). Economic comparisons of the dairy cows breeding with the suckler cows breeding with the stress on impacts to the economy of the LFA farms is methodically and analytically presented in Bašek et al. (2011). The inherent economy of the suckler cows breeding is published in Kopeček et al. (2008). General role of subsidies, including supports for the Czech LFAs, is presented e. g. in Špička, Boudný, Janotová (2009).

The situation in EU countries in the given topics is shown e. g. in Bernués et al. (2011) for the Mediterranean conditions, in Deblitz et al. (1994) for the Eastern states of Germany and in Kirner (2011) for Austria. Information and data from the worldwide networks related to the economy of dairy cows (Hemme et al. 2010) and to beef cattle (Deblitz et al. 2009), based on the so-called typical farms (including Czech farms), are also utilised in the article Broader links of supports with income and environmental impacts see e. g. in Balmann (2000), Chaplin, Davidova, Gorton (2004) and Falconer, Whitby (2000).

2. Methods and data sources

Supports for less favoured areas created a part of the Czech agricultural policy even in the pre-accession period. After 2004 and according to Council Regulation (EC) No 1257/1999 the LFAs have been newly defined and the related supports have become parts of Rural Development Programmes (Horizontal RDP 2004 - 2006; RDP for 2007-13 under Axis 2). Contrary to other EU countries, only grassland is eligible for the Czech LFA payments, without any degresivity or capping. The present acreages of the individual LFA categories and the level of payments in 2010 are documented in Table 1.

² „Nothing is donated to mountain farmers” (Hovorka 2004; see also Crabtree et al. 2003a).

Tab. 1 - LFA categories and payments (2010)

Category	Acreage of agricultural land (thousand ha)	Acreage of grassland (thousand ha)	Payments (CZK/ha of grassland)
Mountain A	479	346	4 127
Mountain B	37	22	3 522
Other A	813	269	3 075
Other B	234	45	2 471
Specific	205	135	2 997
Specific X	14	3	2 392
Total	1 782	820	x

Source: Report on the Czech agriculture 2010.

Mountain A - fully in compliance with the criteria, B - the municipality inside the mountain areas not fully meeting the criteria

Other A- more severe affected areas, less severe affected areas

Specific X- under transition to non-LFA

The total level of LFA supports in 2004 – 2010 compared with the pre-accession period is shown in Table 2. The annual LFA supports after EU accession compared with the pre-accession period have increased by nearly 70%. The total LFA supports for the period of 2004 – 2010 from public financial sources amount to nearly CZK 19 billions.

Tab. 2 - The development of LFA supports (mil. CZK)

Year	Ø 2001-3	2004	2005	2006	2007	2008	2009	2010	Ø 2004-10	Σ 2004-10	Index Ø 2004-10/Ø 2001-3
mil. CZK	1 605	2 610	2 459	2 861	2 814	2 679	2 678	2 791	2 699	18 892	168,2

Source: Reports on the Czech agriculture for 2004 - 2010.

(exchange rate 2010 was 26,285 CZK per Euro)

The LFA payments are special income supports applied only to farms in specified Czech cadastres. Farms in the LFAs receive also other supports as all Czech farms, that is direct payments (SAPS), national payments (TOP-UP), agro-environmental payments and investment supports. Owing to their orientation and conditions, some of these supports are utilised particularly in LFAs (for example TOP-UP payments on suckler cows and agro-environmental payments)³.

The distribution of the utilised agricultural area (UAA) and grassland in the LFAs and outside of the LFAs by the size farm categories shows Table 3.

Tab. 3 - Distribution of agricultural land (thousand ha) by the size farm categories (2010)

Indicator	Farms with less than 50 % of agricultural land in LFA				Farms with more than 50% of agricultural land in LFA				Total
	to 50 ha	51 - 500	501-1000	above 1000	to 50 ha	51 - 500	501-1000	above 1000	
Number of farms	8 348	2 397	362	514	14 702	2 798	456	472	30 049
agricultural land (UAA)	100,8	367,6	291,4	1 034,9	159,8	400,3	329,9	877,1	3 561,8
- grassland	18,3	30,9	22,3	75,2	102,9	240,0	169,6	294,6	953,8
- grassland in LFA	1,1	4,3	3,5	22,1	101,9	236,0	165,7	286,0	820,6
% of grassland in UAA	18,2	8,4	7,7	7,3	64,4	60,0	51,4	33,6	26,8
% of grassland in LFA	6,0	13,9	15,7	29,4	99,0	98,3	97,7	97,1	86,0

Source: Land Parcels Identification System - LPIS

³ It is necessary to add that all direct payments are conditioned by cross compliance (including Good Agricultural and Environmental Conditions – GAEC). Above it, the LFA payments are conditioned by the livestock density in the range 0.2 LU/ha of fodder crops – 1.4 LU/ha of agricultural land.

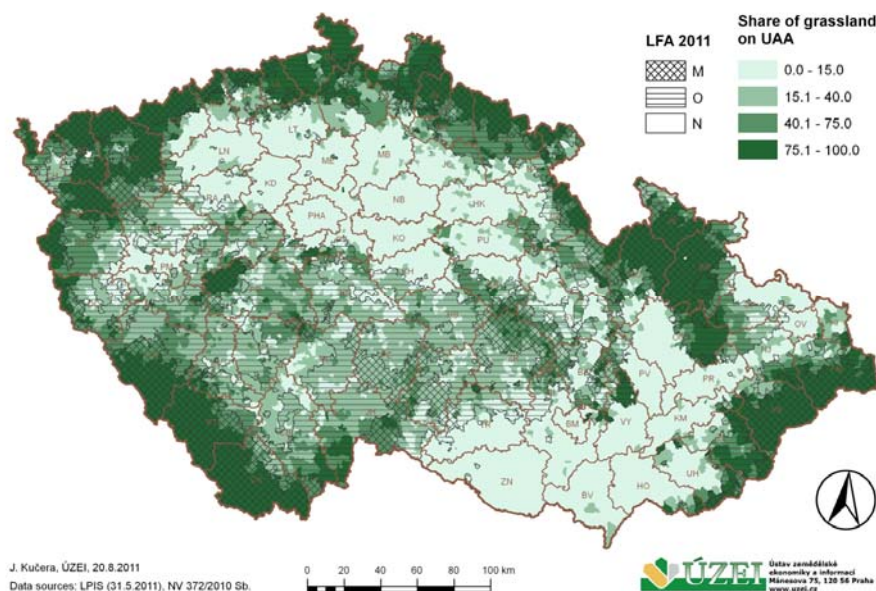
Criteria for the assessment of the effectiveness of the LFA payments are derived from the objectives related to these payments. The criteria (and data sources needed) are as follows:

- (a) The present acreage of the abandoned agricultural land in the LFAs compared with the pre-accession period (000 ha according to the Czech Statistical Office).
- (b) The preservation of job opportunities in the LFAs, measured by the number of Annual Working Units (AWU) per 100 ha of agricultural land: the difference in the current number of AWU in the LFAs compared with the pre-accession period (source: FADN).
- (c) The increase of grassland in the LFAs after EU accession (000 ha, source: the Land Parcels Identification System – LPIS).
- (d) The level of economic viability of farms in the LFAs compared with farms outside of LFAs, measured by the farm net value added per AWU (NVA/AWU – indicator A according to EUROSTAT, it means including supports, without production taxes), from FADN 2007 - 2009.
- (e) The economic balance between small and large farms in LFAs, from FADN 2007 - 2009.

3. Results and discussion

Besides the farm categories in the LFAs by their size it is useful to classify these farms also by their production structure. LFA farms located especially in border regions are characterised by an extensive (low input) cattle breeding (mainly suckler cows) with the prevailing fodder area on grassland. Contrary, many LFA farms outside of the border regions are characterised by a mixed structure with dairy cows and with their fodder area prevailing on arable land. The both categories combine quite differently the production of private goods with the production of public goods. The economy of farms with the mixed structure is much more linked with market conditions, whilst the economy of farms with the extensive breeding of ruminants is much more influenced by the level of LFA payments and by various agro-environmental schemes (maintenance of grassland, organic farming), in which the majority of the farms participates⁴.

Map 1 shows the relations between the LFAs and the share of grassland in agricultural land at present, thus illustrating the allocation of the LFA farms by their production orientation.



Map 1. Share of grassland in UAA and LFA,
M = mountain areas, O = other than mountain LFAs, N = non LFA.

⁴ This fact corresponds with the findings of the European Commission (2008): “Farmers located in LFAs are often offered the possibility to benefit from advantages other than the payment of the compensatory allowance, for example higher aid intensity under other RD measures” (see also Dax 2009).

The economy of the LFA farms with an extensive breeding of ruminants reflects the profitability of the breeding. According e. g. to Bašek et al. (2011), the average area of grassland needed to feed one suckler cow is about 2.20 ha at present. All area payments (SAPS, TOP-UP on agricultural land and LFA payments), linked with this acreage, form in reality indirect supports on feeds. However with the livestock density lower than 0.5 LU/ha of grassland a part of the acreage of grassland is not needed for feeding. All area payments on this acreage, with the deduction of the average costs on the maintenance of grassland (at present about CZK 3,500 – 4,000 per ha), complement the profitability of the suckler cows breeding in the sense of a by-product as “maintenance of landscape”.

Agro-environmental payments linked with this “excessive” acreage of grassland after the deduction of costs on its maintaining directly improve the economy of the LFA farms with the extensive breeding of ruminants. Above it, the economy of many those farms are reinforced e. g. by the sale of the “excessive” biomass, or by the sale of bio-products at higher prices than their normative fixing, respectively⁵.

The profitability in the cattle breeding, influencing the total economy of the LFA farms, is measured by the ratio of the unit revenues to unit costs related to a product, it means to 1 litre of milk, or to 1 kg live weight (lwe) of young animals, respectively. Whereas:

Profitability 1 (P1) = farm gate price (FGP)/unit costs (C);

Profitability 2 (P2) = (FGP + unit direct supports + unit feed supports)/C;

Profitability 3 (P3) = (FGP + unit direct supports + unit feed supports + unit supports for “maintenance of landscape” related to “excessive” acreage of grassland)/C⁶.

The comparisons of the profitability in the dairy cows and suckler cows breeding (for suckler cows with the national average livestock density 0.3 LU/ha of grassland) are shown in Table 4.

Tab. 4 - Comparisons of profitability of dairy cows and suckler cows breeding 2004 - 2010

Category of profitability	2004		2005		2006		2007		2008		2009		2010	
	D	S	D	S	D	S	D	S	D	S	D	S	D	S
Profitability P1	-1,4	-37,5	-0,3	-28,0	-3,3	-43,6	-3,5	-45,2	-4,0	-53,5	-24,2	-52,6	-7,2	-48,0
Profitability P2	7,5	38,9	12,8	46,7	12,4	22,4	10,6	22,2	7,2	15,3	-11,5	18,2	9,5	17,9
Profitability P3	7,5	65,4	12,8	83,9	12,4	55,1	10,6	53,5	7,2	40,2	-11,5	48,3	9,5	46,2

D = dairy cows and profitability related to 1 litre of milk.

S = suckler cows and profitability related to 1 kg lwe of young animals.

Source: Bašek 2011.

Comparisons of the present situation in the Czech agriculture in the LFAs with the goals related to the LFA payments, as regards the structure of agricultural land and employment, are presented in Table 5.

⁵ The payments for all agro-environmental services are (or shall be, respectively) defined to cover higher costs/lower gains connected with their provision.

⁶ Profitability 3 is related only to the suckler cows breeding. An „excessive“ acreage of fodder crops in the dairy cows breeding is not supposed.

Tab. 5 - Impacts of the LFA payments on the land structure and employment						
Indicator		Unit	2003	2010	Difference	2010/2003 (%)
Not utilised agricultural area ¹⁾		t h o u s a n d h a	12,4	2,5	-9,9	20,2
UAA registered in LPIS CR ²⁾			3512,7	3539,4	26,7	100,8
in it:	mountain areas		514	519,4	5,4	101,1
	other than mountain LFA		1241,5	1253,4	11,9	101,0
	non-LFA		1757,1	1766,5	9,4	100,5
Grassland registered in LPIS CR ²⁾			851,4	966,8	115,4	113,6
in it:	mountain areas		349,5	374,1	24,6	107,0
	other than mountain LFA		390,7	459,9	69,2	117,7
	non-LFA		111,2	132,9	21,7	119,5
Arable land registered in LPIS CR ²⁾			2619,3	2526,5	-92,8	96,5
in it:	mountain areas	163,5	143,6	-19,9	87,8	
	other than mountain LFA	846,3	787,7	-58,6	93,1	
	non-LFA	1609,4	1595,1	-14,3	99,1	
Share of arable land ²⁾		%	0,75	0,71	-0,03	x
in it:	mountain areas		0,32	0,28	-0,04	x
	other than mountain LFA		0,68	0,63	-0,05	x
	non-LFA		0,92	0,90	-0,01	x
Thousand AWU ¹⁾			141,3	108,8	-32,5	77,0
AWU /100 ha UAA ³⁾		A W U	3,96	3,1	-0,86	78,3
in it:	mountain areas		3,35	2,80	-0,55	83,6
	other than mountain LFA		3,94	3,09	-0,85	78,4
	non-LFA		3,99	3,02	-0,97	75,7
Source	1) CZSO structural surveys 2003, 2010					
	2) LPIS comparison 2004 and 2011					
	4) FADN surveys 2003, 2009					

The abandonment of agricultural land is a marginal problem in the Czech Republic. Not utilised agricultural area, registered on surveyed farms by the Czech Statistical Office, decreased to 20% after EU accession compared with 2003. The total acreage of abandoned land is estimated to about 20,000 – 30,000 ha, it means less than 1% of the registered total agricultural area. It probably consists mainly of plots, which are not eligible for the CAP supports. It can be supposed, that a part of the land after EU accession, and prevalingly grassland in LFAs, has been rearranged into the land eligible for the supports (see the increased area mainly in LFAs according to the LPIS in Table 5).

Table 5 shows that the acreage of the permanent grassland after EU accession, registered in the LPIS, has increased by more than 13%. It is clearly the consequence of the two incentive supports: the LFA payments paid only on grassland accompanied with investment supports to create new grassland. The share of grassland in the UAA has even exceeded in the Czech mountain LFA (72% in 2011) the average for the European mountain regions (63%). In the case of other than mountain LFA the Czech share of about 37% of grassland reaches approximately the EU average for these areas (Eurostat 2007, Štolbová at al. 2011). From this point of view the LFA payments have played an important role in positive changes in the land use. The share of grassland has increased even more in the areas out of the LFAs after EU accession. This shows that other policy measures such as agro-environmental measures and cross compliance (Good Agricultural and Environmental Conditions – GAEC) have been also effective. However, the total share of arable land in the UAA has decreased only slightly after EU accession.

A contribution of the LFA income supports for rural employment is a bit different story. Many large LFA farms gradually converted into very extensive farm practices based on the suckler cows breeding, with low labour inputs. The total decrease of the number of AWU in the Czech agriculture after EU accession by more than 20% can be mainly dedicated to non-LFA farms, as it is indicated by the reduction in AWU/100 ha of agricultural land in Table 5. This could be a consequence of the reduction of the more labour demanding livestock production in the non-LFA regions.

Tables 6a – 6c present production and economic characteristics for the individual farm categories by their relations to LFA, size and production orientation, applying FADN data for 2007 - 2009⁷.

Tab. 6a - Production and economic characteristics of the farm categories in the mountain LFA (M)

Orientation	Unit	Suckler cows - extensive (E)			Dairy cows (D)			Other orientations (O)		
		≤ 100	101-500	> 500	≤ 100	101-500	> 500	≤ 100	101-500	> 500
Grassland on UAA	%	94,8	97,9	97,1	72,7	75,9	53,5	47,3	56,0	39,1
Fodder crops on UAA	%	97,6	98,9	98,0	78,0	82,9	68,1	51,9	56,1	49,6
LU of cattle/ha of fodder crops	LU	0,5	0,4	0,3	0,9	0,7	0,8	0,5	0,4	0,8
- dairy cow s	LU	0,0	0,0	0,0	0,5	0,4	0,4	0,1	0,0	0,3
- suckler cow s/other cattle	LU	0,5	0,4	0,3	0,4	0,3	0,4	0,4	0,4	0,5
AWU/100 ha of UAA	AWU	2,5	1,3	1,1	4,3	3,3	3,4	3,5	1,8	2,6
Production in total	thous. CZK/ha	11,3	8,5	6,7	32,3	25,4	27,9	20,5	24,2	24,3
- crop production	thous. CZK/ha	4,5	3,6	2,9	7,8	5,6	8,9	11,5	11,9	11,7
- livestock production	thous. CZK/ha	5,2	3,7	2,9	23,9	19,3	17,0	8,0	10,9	11,2
Production with agro-envi payments	thous. CZK/ha	14,5	12,1	11,4	34,2	28,0	29,5	22,1	25,9	25,7
Total costs	thous. CZK/ha	18,8	15,3	15,4	30,8	28,8	36,5	23,5	26,7	32,6
Current subsidies	thous. CZK/ha	13,3	13,1	14,5	10,8	11,7	10,0	9,5	10,1	9,1
- SAPS + TOP-UP	thous. CZK/ha	6,2	5,7	5,8	6,1	6,0	6,2	6,0	6,2	6,1
- LFA	thous. CZK/ha	3,9	3,8	4,0	2,8	3,1	2,2	1,9	2,2	1,6
- agro-environmental	thous. CZK/ha	3,2	3,6	4,7	1,9	2,6	1,6	1,6	1,7	1,4
Subsidies on investment	thous. CZK/ha	0,0	0,0	0,0	0,2	0,0	0,4	0,2	0,0	0,2
FNVA/AWU	thous. CZK	277,0	629,8	881,1	325,0	445,1	335,8	208,6	599,2	338,8
FNVA/ UAA	thous. CZK/ha	7,0	8,4	9,7	13,8	14,6	11,6	7,3	10,9	8,9
FNVA without LFA/AWU	thous. CZK	122,7	344,9	517,8	259,1	350,6	272,1	154,3	478,3	277,9
FFNVA without LFA/UAA	thous. CZK/ha	3,1	4,6	5,7	11,0	11,5	9,4	5,4	8,7	7,3
FNVA without DP and LFA/AWU	thous. CZK	-122,7	-82,5	-9,1	115,4	167,7	92,6	-17,1	137,4	45,7
FNVA without DP and LFA/UAA	thous. CZK/ha	-3,1	-1,1	-0,1	4,9	5,5	3,2	-0,6	2,5	1,2
Share of income supports in FNVA	%	144,3	113,1	101,0	64,5	62,3	72,4	108,2	77,1	86,5
Production with AE - total costs	thous. CZK/ha	-4,3	-3,2	-4,0	3,4	-0,8	-7,0	-1,4	-0,8	-6,9

Tables 6a – 6c show that particularly large mountain farms with the extensive suckler cows breeding realize an extremely high farm net value added (FNVA) per AWU, compared with other farm categories. This value is generated mainly by income subsidies (direct payments and LFA payments) on eligible land, which is not fully used as fodder land. In this way they receive a rent that is not used for job opportunities (see the low number of AWU/100 ha), and which is not possible to generate fully in other land use and farm practices. These differences are illustrated on Graph 1.

Tab. 6b - Production and economic characteristics of the farm categories in the other than mountain LFA (O)

Orientation	Unit	Suckler cows - extensive			Dairy cows (D)			Other orientations (O)		
		≤ 100	101-500	> 500	≤ 100	101-500	> 500	≤ 100	101-500	> 500
Grassland on UAA	%	87,2	93,1	42,2	42,5	29,3	29,6	22,9	20,9	
Fodder crops on UAA	%	93,9	96,8	61,5	59,6	50,0	33,5	26,5	35,0	
LU of cattle/ha of fodder crops	LU	0,6	0,4	1,2	1,0	1,1	0,7	0,6	0,9	
- dairy cows	LU	0,0	0,0	0,7	0,6	0,6	0,1	0,1	0,4	
- suckler cows/other cattle	LU	0,6	0,4	0,5	0,4	0,5	0,6	0,5	0,5	
AWU/100 ha of UAA	AWU	2,7	1,4	4,3	3,0	4,0	3,7	2,5	2,8	
Production in total	thous. CZK/ha	12,3	9,2	36,3	28,4	34,8	26,1	25,0	28,6	
- crop production	thous. CZK/ha	5,3	4,0	11,3	9,4	13,2	13,6	14,8	15,2	
- livestock production	thous. CZK/ha	6,2	4,6	25,0	18,5	19,8	11,0	8,5	12,0	
Production with agro-envi payments	thous. CZK/ha	15,0	13,8	37,3	29,5	35,7	27,4	26,0	29,5	
Total costs	thous. CZK/ha	16,7	15,5	34,6	30,6	42,7	26,3	29,1	35,5	
Current subsidies	thous. CZK/ha	12,0	13,2	8,5	8,6	8,2	7,9	7,4	7,7	
- SAPS + TOP-UP	thous. CZK/ha	6,7	5,7	6,3	6,2	6,4	5,8	5,8	6,2	
- LFA	thous. CZK/ha	2,6	2,9	1,2	1,3	0,9	0,8	0,6	0,6	
- agro-environmental	thous. CZK/ha	2,7	4,6	1,0	1,1	0,9	1,3	1,0	0,9	
Subsidies on investment	thous. CZK/ha	0,1	0,1	0,3	0,1	0,6	0,1	0,1	0,4	
FNVA/AWU	thous. CZK	319,5	637,4	276,5	389,7	286,3	242,0	313,1	340,6	
FNVA/ UAA	thous. CZK/ha	8,5	8,8	11,9	11,6	11,4	9,1	7,7	9,6	
FNVA without LFA/AWU	thous. CZK	221,8	427,3	248,6	346,0	263,7	220,7	288,7	319,3	
FFNVA without LFA/UAA	thous. CZK/ha	5,9	5,9	10,7	10,3	10,5	8,3	7,1	9,0	
FNVA without DP and LFA/AWU	thous. CZK	-30,1	14,5	102,2	137,7	103,0	66,5	52,9	99,3	
FNVA without DP and LFA/UAA	thous. CZK/ha	-0,8	0,2	4,4	4,1	4,1	2,5	1,3	2,8	
Share of income supports in FNVA	%	109,4	97,7	63,0	64,7	64,0	72,5	83,1	70,8	
Production with AE - total costs	thous. CZK/ha	-1,7	-1,7	2,7	-1,1	-7,0	1,1	-3,1	-6,0	

Source: FADN 2007 - 2009.

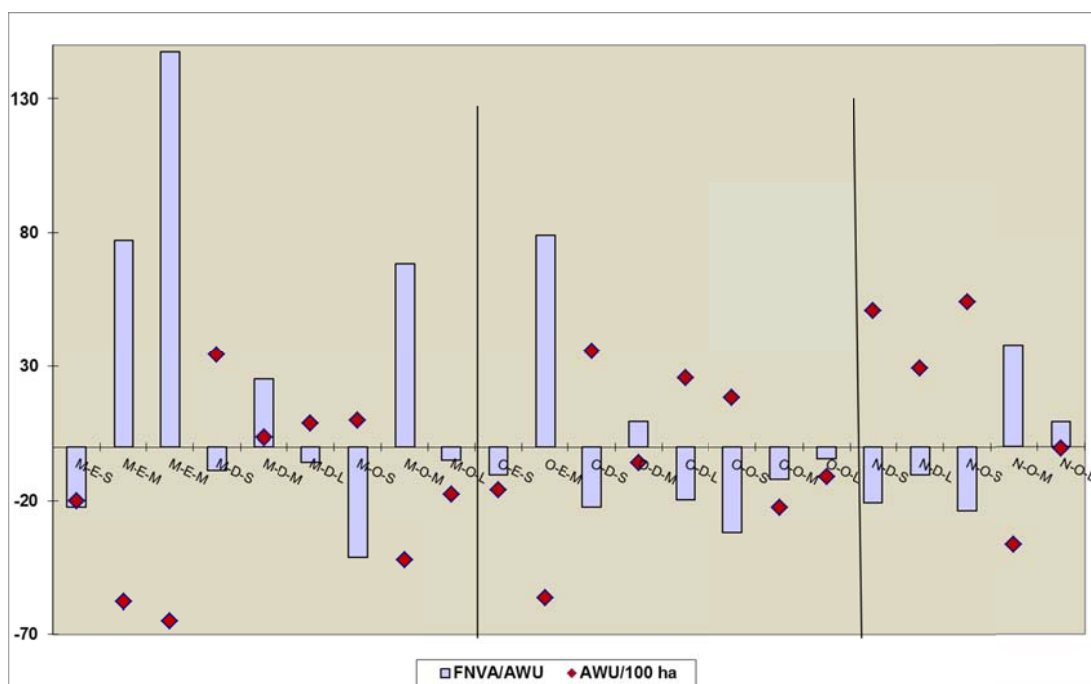
⁷ The farm categories presented in Tables 6a – 6c are adjusted to fulfil their representativeness.

Tab. 6c - Production and economic characteristics of the farm categories not in LFA (N)

Orientation	Unit	Dairy cows (D)		Other orientations (O)		
		≤ 100	> 500	≤ 100	101-500	> 500
Size (ha of UAA)						
Grassland on UAA	%	22,7	15,3	5,5	3,5	5,4
Fodder crops on UAA	%	47,6	42,1	8,9	6,4	15,5
LU of cattle/ha of fodder crops	LU	1,4	1,4	0,8	0,8	1,4
- dairy cow s	LU	0,9	0,8	0,1	0,2	0,7
- suckler cow s/other cattle	LU	0,5	0,6	0,7	0,6	0,7
AWU/100 ha of UAA	AWU	4,8	4,1	4,9	2,0	3,2
Production in total	thous. CZK/ha	38,8	43,4	44,8	26,5	35,8
- crop production	thous. CZK/ha	12,8	15,6	33,2	22,5	22,6
- livestock production	thous. CZK/ha	24,8	24,3	9,9	2,7	10,7
Production w ith agro-envi payments	thous. CZK/ha	39,2	44,1	45,7	26,9	36,4
Total costs	thous. CZK/ha	35,6	50,6	42,7	27,5	41,1
Current subsidies	thous. CZK/ha	7,2	7,8	7,1	6,5	7,5
- SAPS + TOP-UP	thous. CZK/ha	6,7	6,9	6,2	6,1	6,9
- LFA	thous. CZK/ha	0,1	0,2	0,0	0,0	0,0
- agro-environmental	thous. CZK/ha	0,4	0,7	0,9	0,4	0,6
Subsidies on investment	thous. CZK/ha	0,0	0,3	0,5	0,1	0,4
FNVA/AWU	thous. CZK	282,4	319,0	271,4	490,6	389,4
FNVA/ UAA	thous. CZK/ha	13,5	13,1	13,3	9,8	12,3
FNVA without LFA/AWU	thous. CZK	280,3	314,1	271,0	489,8	388,0
FFNVA without LFA/UAA	thous. CZK/ha	13,4	12,9	13,3	9,8	12,3
FNVA without DP and LFA/AWU	thous. CZK	140,2	146,1	144,5	184,4	169,6
FNVA without DP and LFA/UAA	thous. CZK/ha	6,7	6,0	7,1	3,7	5,4
Share of income supports in FNVA	%	50,4	54,2	46,8	62,4	56,4
Production w ith AE - total costs	thous. CZK/ha	3,6	-6,5	3,0	-0,6	-4,7

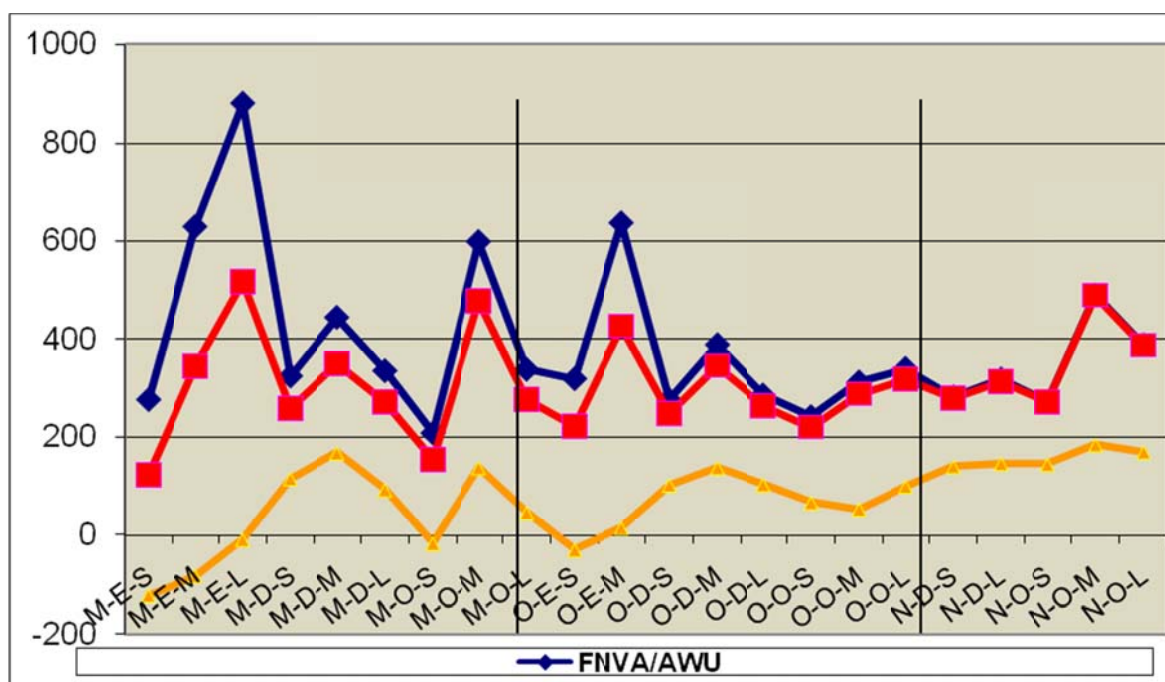
Source: FADN 2007 - 2009.

The influence of income supports (LFA and direct payments) on the level of the FNVA/AWU for the given farm categories is presented on Graph 2. The graph illustrates the significance of the LFA payments for the generation of rents on particularly of larger farms in mountain regions.



Graph 1. FNVA/AWU and AWU/100 ha – deviation from the Czech average (%),

S = smaller farms (up to 100 ha); M = medium size farms (101 – 500 ha); L = large farms (more than 500 ha). The Czech average is 358 000 CZK of FNVA per AWU and 3,14 AWU per 100 ha of UAA.



Graph 2. FNVA/AWU (thousand CZK).

S = smaller farms (up to 100 ha); M = medium size farms (101 – 500 ha); L = large farms (more than 500 ha).

Table 7 presents the clustering of the applied farm categories into 4 quadrants:

+ NVA/AWU - AWU/100 ha	- NVA/AWU + AWU/100 ha
M-E-M, M-E-L, M-O-M, O-E-M, O-D-M, N-O-M	M-D-S, M-D-L, M-O-S, O-D-S, O-D-L, O-O-S, N-D-S, N-D-L, N-O-S
- NVA/AWU - AWU/100 ha	+ NVA/AWU + AWU/100 ha
M-E-S, M-O-L, O-E-S, O-O-M, O-O-L	M-D-M, N-O-L

Tab 7. Clusters of farm categories by the farm NVA/AWU and AWU/100ha.

It is possible to derive from the presented results the following issues:

- The problem of land abandonment is marginal in the Czech Republic. The LFA payments together with other income supports are sufficient enough to prevent a further abandonment of the land.
- The LFA payments have created sufficient stimulations for a needed enlargement of the acreage of grassland and for a decrease in the share of arable land in mountain and sub-mountain regions. An intensive farming on arable land has been still prevailing in some of the LFAs, particularly outside of the border regions⁸, oriented on mixed production with dairy cows breeding and in the last years also on an intensive production of biomass for energy. Stimulative agro-environmental measures and particularly GAEC can be more effective instruments for increasing the grassland area and grazing in those regions, preventing there also soil degradation.
- Larger farms in the LFAs (especially in border regions) are in average orientated on a very extensive (low-input) suckler cows breeding and they are characterised by:

⁸ See Map 1 and data in Table 6a – 6c for larger farms in LFAs with other production orientation than on extensive suckler cows breeding. Such farms are usually located outside of the border regions (e. g. in Českomoravská vrchovina Highland), or are descendants of former cooperatives, respectively. Any changes in their production orientation linked with the enlargement of grassland collide with more historical barriers, than on farms based on the leased or privatised state land located mainly in the border regions (Sudetenland). However, a deeper analysis of reasons of this development is beyond the topics of the article.

- . very low labour inputs and a from this a low contribution to the rural employment;
- . very good economic situation measured by the FNVA/AWU, compared even with farms outside of LFAs, generated by a high share of income supports in their FNVA;
- . high social costs to preserve/create 1 job opportunity.

It is possible to state, that hitherto supports for farms in the LFAs have not led to fulfil sufficiently the social/policy goals of the supports. First, this is a consequence of a rational behaviour and adjustment of farms to market and policy conditions. On the other hand, there is an evident overcompensation of supports and rent effects on many (especially larger) farms with a very extensive usage of their production sources. Then a paradoxical situation occurs: LFA farms with supports aimed at the balancing of the income situation of farms in worse natural and climatic conditions produce much higher FNVA/AWU than farms located in the best natural conditions.

These rent effects issue from the reality, that only limited part of grassland (about 50% on average) is utilised for feeds in the extensive breeding of ruminants and the remaining part of grassland is "maintained" at minimum costs and high supports as a by-product of the breeding.

It is supposed that direct income supports per 1 ha of agricultural land, LFA area payments and additional coupled supports for ruminants (particularly in marginal areas) will be applied in the CAP after 2013. The LFAs will be newly defined exclusively according to natural, climatic and soil conditions (European Commission 2011). Under these suppositions and in accordance with the assessment of effects of the hitherto LFA payments, the following questions arise for the Czech policy making:

- How to moderate or eliminate the hitherto high rent effects, generated on large farms with an extreme low intensity of production?
- How to enlarge the acreage of grassland in the selected regions and localities (especially out of border regions)?

4. Conclusions

The current Czech system of supports to farms in the LFAs, regardless possible changes in the LFA definition after 2013, is not sustainable. The system does not fulfil the goals in balancing economic situation on farms and in rural employment. Above it, and especially in the inner Czech regions, does not generate sufficient environmental effects.

Future multi-annual strategic objectives of Pillar II of the CAP are aimed at improving the efficiency of resources with regard to smart growth and the sustainable EU agriculture and inclusive rural development in line with the strategy Europe 2020 (European Commission, 2010 A). Future objectives of the CAP are (European Commission, 2010 B): viable food production, sustainable management of natural resources and climate action, balanced territorial development. Supports for farms located in LFAs in the Proposal of the Regulation for next EU programming period (European Commission 2011) belong to measures which are particularly important for increasing the competitiveness of all types of farming and improving the viability of farms. Member countries will be responsible for a correct payments calculation and effective allocation of the supports.

A reduction or elimination of rent effects on large farms with an extensive breeding of ruminants can be reached by more measures, including their combinations. There is a question for example of the following measures, which are also indicated in the suggestions for the CAP after 2013:

- The application of a capping (threshold) for LFA payments.
- A degresivity of the LFA payments with the possible options or their combinations:
 - by the acreage of farms, or by the acreage of agricultural land classified for LFA, respectively;

- by the livestock density LU/ha of agricultural land, or of forage area of farms, respectively;
 - by the consideration of labour intensity.
- A differentiation of coupled supports for ruminants by the livestock density LU/ha of agricultural land/forage area (e. g. zero supports up to 0.5 LU/ha of agricultural land).

The LFA payments on agricultural land could issue on such farms in a significant growth of supports, without a pressure on needed changes of their farm practices. The LFA payments under the proposed regulation (European Commission 2011) would lose their long term nature. They shall be granted annually per hectare of the UAA as a special complement to direct income payments. However, the needed changes in farms practices particularly in the areas threatened by soil degradation or water management problems can be provided in the future by a stricter cross compliance in the combination with the “greening” measures for direct payments.

On the majority of farms located in the border regions with a high share of grassland in agricultural land this change would be projected in a significant reduction of the LFA supports and in a reduction of extremely high rent effects on these farms.

References

-
- [1] Balmann, A. (2000). *Modelling land use with Multi-agent Systems – Perspectives for the analysis of agricultural policies*. IIFET 2000 Proceedings on www.oregonstate.edu.
 - [2] Bernués, A., Ruiz, R., Olaizola, A., Villalba, D. & Casasús, I. (2011). Sustainability of pasture-based livestock farming systems in the European Mediterranean context: Synergies and trade-offs. *Livestock Science*, 139(1/2), 44-57. Doi: 10.1016/j.livsci.2011.03.018.
 - [3] Bašek, V. et al. (2011). Working document for the Ministry of Agriculture on the economy of dairy and suckler cows breeding. IAEL.
 - [4] Chaplin, H., Davidova, S. & Gortom, M. (2004). Agricultural adjustment and the diversification of farm households and corporate farms in Central Europe. *Journal of Rural Studies* 20(1), 61-77. Doi: 10.1016/S0743-0167(03)00043-3.
 - [5] Cooper, T. et al. (2006). *An evaluation of the Less Favoured Area measure in the 25 member states of the European Union*. Report for DG AGRI. Institute for European Environmental Policy London.
 - [6] Council Regulation (EC) No 1257/1999 on Rural Development Support by Means of the European Agricultural Guarantee Fund (EAGGF); Brussels.
 - [7] Council Regulation (EC) No 1698/2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD).
 - [8] Crabtree, R. et al. (2003a). *Review of Area – based Less Favoured Area Payments Across EU Member States*; Report for the Land Use Policy Group of the GB statutory conservation, countryside and environment agency. Oxford: CJC Consulting.
 - [9] Crabtree, R et al. (2003b). *Review of Area – based Less Favoured Area payments Across Great Britain*; Final report for the Land Use Policy Group of the GB statutory conservation, countryside and environment agencies. Oxford.
 - [10] Czech Ministry of Agriculture – Institute of Agricultural Economics and Information (2004 - 2010). *Zprávy o stavu zemědělství ČR 2004 - 2010*. Praha: Czech Ministry of Agriculture.
 - [11] Dax, T. (2009). Recognising the amenities of mountain agriculture in Europe, *Mountain Forum Bulletin* 9(1), 3-5.

- [12] Deblitz, C., Balliet, U., Krebs, S. & Rump, M. (1994). *Extensive Grünlandnutzung in den östlichen Bundesländern. Schiftenreihe des Bundesministeriums für Ernährung, Landwirtschaft und Forsten*. Reihe A: Angewandte Wissenschaft Heft 429.
- [13] Deblitz, C. et al. (2009). *Beef Report 2009*. Braunschweig: Johann Heinrich von Thünen-Institut.
- [14] Hemme, T. et al. (2010). *Dairy Report 2010*. International Farm Comparison Network, Kiel: Dairy Research Center.
- [15] Hovorka G. (2004). *Den Bergbauernbetrieben wird nichts geschenkt*. Forschungsbericht Nr. 52. Wien: Bundesanstalt für Bergbauernfragen.
- [16] Falconer, K. & Whitby, M. (2000). Untangling red tape: scheme administration and the invisible costs of European agri-environmental policy. *European Environment*, 10(4), 193-203.
- [17] Gwyn, D. et al. (2003). *A review of the CAP rural development plan 2000 - 2006: Implications for natural heritage*. The Heritage Council of Ireland Series.
- [18] Kirner, L. (2011). Wettbewerbsfähige Rinderhaltung in Österreich nach Auslaufen der Marktordnungsprämien im Jahr 2013. *Agrarpolitischer Arbeitsbeihelf* Nr. 40. Wien: Bundesanstalt für Agrarwirtschaft.
- [19] Kopeček, P., Foltýn, I. & Bjelka, M. (2008). Ekonomika chovu krav bez tržní produkce mléka. In Šetrné čerpání přírodních zdrojů a údržba krajiny pomocí chovu krav bez tržní produkce mléka (pp. 67-75). Rapotín: Research Institute for Cattle Breeding Ltd.
- [20] Kvapilík, J. (2011). Zemědělská produkce a přímé platby v unii a ČR. *Náš chov*, 71(5), 17 - 21.
- [21] Špička, J. Boudný, J. & Janotová, B. (2009). The role of subsidies in managing the operating risk of agricultural enterprises. *Agricultural Economics (Czech)*, 55(4), 169 - 180.
- [22] Štolbová, M. et al. (2007). *Problematika méně příznivých oblastí*. Praha: Research Institute of Agricultural Economics.
- [23] Štolbová, M., Hlavsa, T. & Lekešová, M. (2010). Methods of calculating the handicaps of less favoured natural conditions. *Agricultural Economic (Czech)*, 56(5), 215 - 223.
- [24] Štolbová M. et al. (2011). *Podpory pro podniky v méně příznivých oblastech. (Supports for the farms in less-favored areas)*. Report to the Ministry of Agriculture No. 40, Praha: Institute of Agricultural Economics and Information.
- [25] The European Commission (2008). *Review of the less favoured areas scheme. Public consultation document for impact assessment*. Brussels
- [26] The European Commission (2009). *Peak performance. New Insights into Mountain Farming in the European Union*, SEC (2009) [Commission staff working document], Brussels.
- [27] The European Commission (2010a). *EUROPE 2020 a strategy for smart, sustainable and inclusive growth*. [Communication from the Commission]. Brussels.
- [28] The European Commission (2010b). *The CAP towards 2020: meeting the food, natural resources and territorial challenges of the future*. Brussels.
- [29] The European Commission (2011). *Proposal for a regulation of the European parliament and of the Council on support for rural development by the European Agricultural Fund for Rural Development (EAFRD)*. Brussels.