

Innovation and investment activities in the Czech Less Favoured Areas

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Innovation and investment activities in agri enterprises

- Improve efficiency of production factors
- RDP:
 - ↑ labour productivity
 - ↑ gross farm income
 - ↑ productivity of factors
- Contribution to rural development:
 - New forms of economic activities
 - New jobs
 - Increasing of population income, changes of life conditions
 - Development of infrastructure

Agri enterprises in LFAs

- Areas affected by natural constraints
- Lower performance: ↑ costs, ↓ income, ↓ value added
- Main aim:
 - Assessment of innovation and investment activities of agri holding in the Czech LFAs
- Research questions:
 - Does the size of the enterprise affect these activities?
 - Are there difference in these activities across Less Favoured Areas?
- Assessed measures of RDP 07-13
 - I.1.1 Modernization
 - construction and reconstruction of buildings, new techniques and technologies

Material and Methods

- Data

- FADN 2011 – 2014;
- Farms: > 1 ha UAA, M: 766, O: 1842, Non: 2200, Total: 4822

- Methods

- ***Exploratory***: exploratory statistical analysis of selected economic indicators
- ***Identification of factors influencing the I+I activity***: binary logistic regression
- ***Testing of differences between groups (supported vs. not supported)***: Mann Whitney test (data are not normally distributed)

UAA (ha) of supported enterprises

Area	UAA (ha)	UAA (ha) of supported farms	Supported/all (%)
LFA-M	522 600	238 690	45.67
LFA-O	1 256 500	664 421	52.88
Non-LFA	1 774 200	749 625	42.25
Total	3 553 300	1 652 736	46.51

Source: Green report, 2015

Structure of the support

- Animal production (76 %)
 - Waste management
 - Cattle breeding technologies
 - Feed warehouses
- Plant production (24 %)
 - Storage technology
 - Machinery and equipment
 - Constructions of permanent crops

Supported enterprises (FADN 2011 – 14)

Area	Supported		Total
	No	Yes	
Mountain	717	49	766
Other	1747	95	1842
Non	2130	70	2200
Total	4594	214	4808

Structure:

M: 6.83 %

O: 5.44 %

Non: 3.27 %

Examination of factors

- Binary logistic regression
- Dependent variable: support (yes, no)
- Explanatory variables:
 - Expensiveness,
 - NVA/AWU,
 - AWU/100 ha,
 - Other production,
 - LFA type,
 - Size group (6 size groups by UAA),
 - Indebtedness,
 - Livestock density

Identifications of factors

	B	S.E.	Wald	df	Sig.	Exp(B)
Expensiveness	-0,222	0,164	1,828	1	0,176	0,801
NVA_AWU	0	0	2,735	1	0,098	1
AWU_100ha	-0,08	0,059	1,875	1	0,171	0,923
Other_product	0,014	0,006	5,238	1	0,022	1,014
LFA_type			15,415	2	0	
LFA-M	0,459	0,196	5,476	1	0,019	1,582
nonLFA	-0,395	0,174	5,16	1	0,023	0,674
Size_group			131,321	5	0	
SG1	-2,48	0,304	66,657	1	0	0,084
SG2	-1,206	0,378	10,197	1	0,001	0,299
SG3	-1,206	0,313	14,895	1	0	0,299
SG4	-0,302	0,26	1,347	1	0,246	0,739
SG5	0,028	0,285	0,01	1	0,922	1,028
Indeptedness	0,64	0,285	5,051	1	0,025	1,896
Livestock_density	0,517	0,213	5,919	1	0,015	1,677
Constant	-1,545	0,4	14,937	1	0	0,213

Identifications of factors

	B	S.E.	Wald	df	Sig.	Exp(B)
Other_product	0,011	0,006	3,854	1	0,05	↑ 1,011
LFA_type			20,315	2	0	
LFA-M	0,426	0,19	5,009	1	0,025	↑ 1,531
nonLFA	-0,467	0,166	7,875	1	0,005	0,627
Size_group			143,208	5	0	
SG1	-2,528	0,299	71,46	1	0	0,08
SG2	-1,28	0,375	11,645	1	0,001	0,278
SG3	-1,241	0,311	15,916	1	0	0,289
SG4	-0,305	0,259	1,386	1	0,239	0,737
SG5	0,042	0,284	0,022	1	0,883	↑ 1,043
Indeptedness	0,52	0,235	4,869	1	0,027	↑ 1,681
Livestock_density	0,278	0,091	9,257	1	0,002	↑ 1,321
Constant	-2,125	0,264	64,956	1	0	0,119

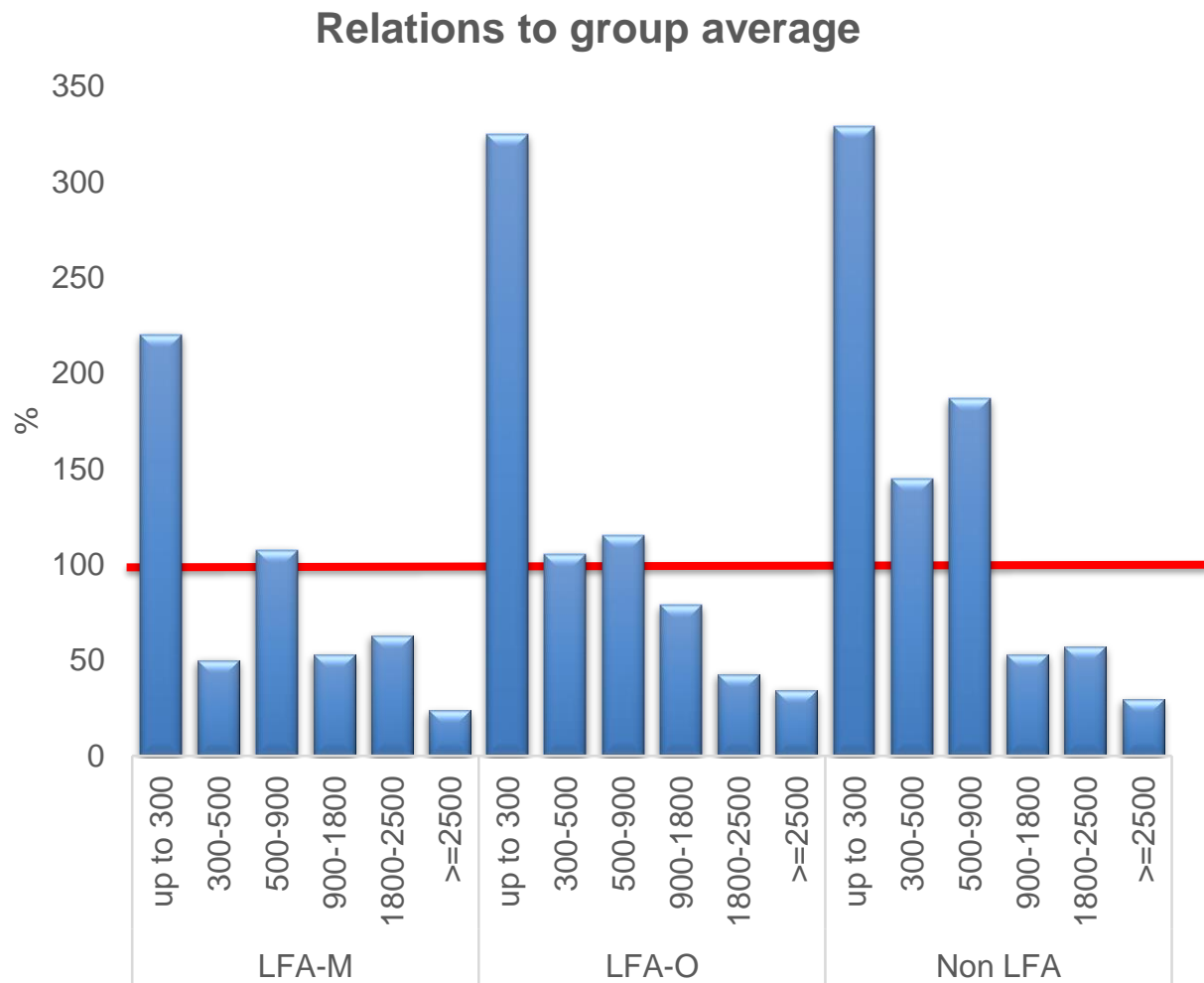
Predicted correctly: 95.5 %

Nagelkerke R-square: 0,16

Overall test of the model: Chi-square = 240.98, p-value = 0.001

Size group and LFA type

	Size group	CZK/ha
LFA-M	up to 300	11 304
	300-500	2 561
	500-900	5 521
	900-1800	2 706
	1800-2500	3 223
	>=2500	1 217
LFA-O	up to 300	13 987
	300-500	4 549
	500-900	4 961
	900-1800	3 394
	1800-2500	1 835
	>=2500	1 471
Non LFA	up to 300	11 047
	300-500	5 087
	500-900	6 555
	900-1800	1 862
	1800-2500	2 001
	>=2500	1 030



Significant factors

- Other production: ↑ in supported farms, LFA-M
- Indebtedness: ↑ in supported farms, LFA-M
- Livestock density: ↑ in supported farms, especially in LFA-M

Selected economic indicators

	Supported	NVA/AWU (CZK)	AWU/ 100ha	Labour productivity (CZK/CZK)	Animal prod (%)	Fixed Assets/ha (CZK)
LFA-M	No	484 454	3,16	0.49	53,66	61 064
	Yes	560 200	2,73	0.61	49,05	70 435
LFA-Other	No	536 257	3,38	1.07	38,22	64 134
	Yes	540 395	3,31	1.15	46,63	84 261
Non LFA	No	682 711	3,61	1.05	16,86	66 542
	Yes	657 300	3,05	0.99	32,00	95 650

Tendencias 2011 – 2014

		LFA-M	LFA-O	Non LFA
Indicator	Supported	Trend	Trend	Trend
NVA/AWU	No			
	Yes			
Labour prod	No			
	Yes			
Other prod	No			
	Yes			

Source: FADN 2011 – 14

Note:  > 10%,  slight increase (0-10%)

Bonus points for applicants

- Condition: share of UAA in LFA ≥ 75 %
- LFA-M: supported 49 farms, all with bonus points
- LFA-O: supported 95 farms, 79 with bonus
- Differences in amount per ha

Bonus	n	Mean	Std. Deviation	Coeff of var
no	16	4 473	4 644	1.04
yes	79	4 277	6 332	1.48

- Mann Whitney test: $p = 0.544$, no sig. diff.

Conclusion

- Higher innovation and investment activity in LFA-M (based on share of farms in the area)
- Higher support in smaller farms (up to 300 ha UAA), smaller farms are more engaged in LFA-M (against Non-LFA). Bigger farms (above 2500 ha) lower I+I activity
- LFA-M: mostly I+I related to livestock production, Non-LFA: crop production
- Other production (diversification): higher level in LFA-M (supported farms) - but stagnant, up warding trend in LFA-O and Non LFA
- Higher viability (NVA/AWU) in supported farms across all areas
- Differences in indebtedness: access to credits (capital mobilisation), easier to innovate