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Economic effects of the Common Agricultural Policy on employment in Austria

Abstract: *The paper estimates the effects of public payments in agriculture on employment in two ways. A partial analysis of FADN-data concentrating on the agricultural sector shows a preservation of 45,000 to 57,000 jobs for the year 2004 in agriculture because of public payments but without taking into account effects of and interdependencies to other sectors. As a second step an input-output analysis estimates the employment effects of a hypothetical redistribution of agricultural subsidies to other sectors. The results show a decrease of 45,000 work places in the primary sector and an increase of 12,000 jobs in other sectors. But in all a decrease of 33,000 work places would be the result under the assumption of a constant volume of overall production. Due to the low income level in the primary sector public payments for agriculture seem to be a relatively cheap possibility to reach the highest possible level of employment with the side effects of keeping settlement in peripheral regions and maintaining the landscape.*

Keywords: *rural development; employment effects; CAP*

Introduction

Rural areas are threatened by migration and the abandonment of agricultural land. The Austrian Rural Development Programme 2000-2006 aimed at – among other more detailed targets – the maintenance of sustainable, competitive and multifunctional agriculture and forestry within a functioning and vital rural area. The Austrian agricultural policy advocates the view that agriculture in general and family farms in particular contribute substantially to the quality of life, the preservation of the cultural landscape, the permanent settlement of rural areas and to food security.

The existence of employment possibilities is indispensable for the maintenance of spread-out settlements in remote rural areas. Although farming offers these possibilities, the impact of agricultural subsidies on employment have thus far hardly been investigated or estimated in Austria. Obviously, not all the measures within the Austrian Rural Development Programme have as their main objective to create employment. For instance, the Austrian Agri-Environmental Programme (ÖPUL) and the compensatory allowance scheme are the highest endowed measures in Austria, yet their impact on the level and stability of income, and thus on employment, are merely side effects of the actual policy measures. Moreover, support for vocational training, the improved processing and marketing of agricultural and forestry products, as well as other subsidies are likely to contribute to a higher employment rate than would exist in the absence of financial support.

Ultimately, the aim of this paper is to estimate the employment effects of the Austrian agricultural subsidies. Towards this end, we shall use two approaches which firstly focus on the income and employment effects of subsidies in the primary sector and secondly on the macroeconomic employment effects of a redistribution of public monies.

Employment in the Austrian primary sector

In Austria, 3.744m persons were employed in 2004, 5% thereof in agriculture and forestry (see Table 1). 47% of all agriculture and forestry employees were women, with 79% of them employed full time. The percentage of full-time employees among the male labour force in agriculture and forestry stood at 94.2%. In the primary sector, 81% of the labour force was self-employed, i.e. so-called family labour.

Table 1. Number of employees in Austria by economic sectors

Sector	No. of full time employees	No. of part time employees	Total number of employees	Share of women in % of all employees	Share of employees per sector in %
Agriculture and forestry	164,052	24,388	188,440	47.1	5.0
Commerce and industry	941,932	94,317	1,036,249	21.5	27.7
Services	1,902,112	617,289	2,519,401	54.4	67.3
Total	3,008,096	735,994	3,744,090	44.9	100.0

Source: Statistics Austria, Arbeitskräfteerhebung 2004 (ISIS database)

A comparison of the population census results for the period 1991 to 2001 shows a decline in the share of employees working in agriculture and forestry, from 6.2% to 4.1%, as well as a reduction in total jobs within the primary sector, by roughly 30% (Statistics Austria 1991, 2001; see Figure 1). A downward trend was also evident in the secondary sector (the number of jobs declined by 17%, while the share of overall employment diminished from 35% to 27.9%). In contrast, the service sector grew (its share of overall employment rose from 58.8% to 68%, while the number of jobs increased by 7% in public services and 36% in private services).

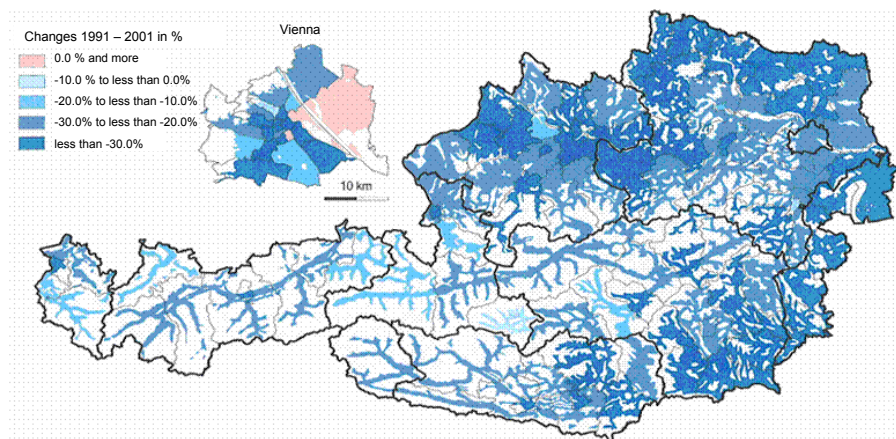


Figure 1. Change in workforce numbers in the primary sector, 1991-2001

Source: ÖROK Atlas 2004

The last survey of work force in agriculture and forestry was carried out in 2003. In total nearly 440,000 self-employed and family work units worked in agriculture and forestry with different levels of employment, which means about 160,900 annual working units (AWU) (Table 2). In all 84% of the total amount of 191,239 AWUs in agriculture and forestry was family labour.

Table 2. Labour input of family labour in agriculture and forestry in 2003.

Level of employment	100%	75-99%	50-74%	25-49%	1-24%	Total
Farm manager	66,522	12,419	26,020	30,246	47,883	183,090
Family member	19,040	10,313	24,793	57,970	144,393	256,509
Total	85,562	22,732	50,813	88,216	192,276	439,599
AWU	85,562	19,891	26,931	24,700	3,846	160,930

Source: Statistics Austria, Survey of work force in agriculture and forestry

According to estimates by Statistics Austria and forecasts by the Federal Institute of Agricultural Economics, in 2004 the number of AWU in agriculture and forestry was nearly 190,000; and 84% thereof were self-employed and family work units. However, since 1976 labour input in the primary sector has dropped by 50%.

The Austrian Rural Development Programme

During the 2000-2006 period a total amount of € 15.2 bn public monies have been spent to subsidise the primary sector. This means an annual average of the agricultural budget of € 2.2 bn whereof 56% stem from the EU budget, 21% of national sources and 23% from the Austrian Federal States. The second pillar of the CAP is vitally important for Austrian agriculture and forestry, as, for example, 63% of the total national agricultural budget was allocated to Rural Development, while only 34% went towards market regulation (Figure 2). In comparison, only 21% of the total EU agricultural budget was allocated to rural development in 2006 (BMLFUW 2008).

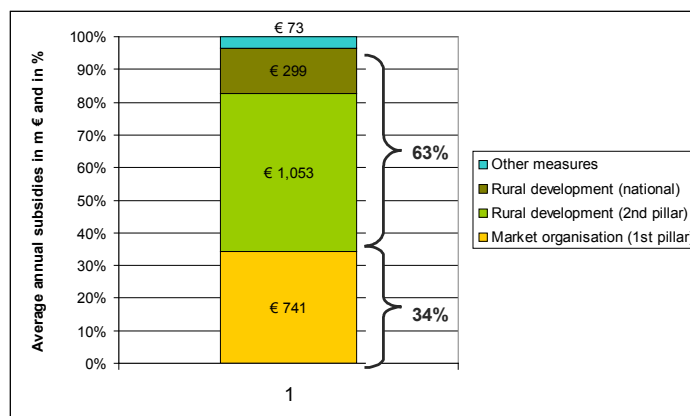


Figure 2. Average annual use of agricultural budget in the period 2000-2006

Source: AWI 2009; own calculation

Payments of the Austrian Rural Development Programme (RDP) of the whole period 2000-2006 amount to € 7 bn, the main share (61%) of these payments was spent on the Austrian Agri-Environmental Programme (ÖPUL) and another 26% on compensatory allowances for less favoured areas. Through such measures as “investment aids,” “improvement of processing and marketing of agricultural products,” “adaptation and development of rural areas,” “setting-up of new farmers” and others, total investments in the amount of € 3.75 bn were induced by the RDP. Overall, some 73,400 jobs have been secured and more than 1,000 new jobs have been created by these measures (Table 3).

Table 3. Selected results of the update for the mid-term evaluation (without objective 1 region “Burgenland”)

Measure	Public subsidies	Induced investments	Number of jobs safed	Number of jobs created
	in m €	in m €		
Investment aid	293.8	1,832.6	53,777	0
Installation of young farmers	86.6	357.5 *	7,276 *	0
Vocational training	45.5	85.9	x	x
Compensatoy allowance for less-favoured areas	1,830.7	x	x	x
Agri-environmental measures (ÖPUL)	4,303.1	x	x	x
Processing and marketing of agricultural products	90.0	722.9	x	x
Forestry	125.6	226.4	x	x
Adaption and development of rural areas	233.7	525.8	12,362	1,092
Total	7,009.1	3,751.1	73,415	1,092

* These values are results of the update of the mid-term evaluation (BMLFUW/2005a)

x ... no information available

Source: BMLFUW 2005a and 2008; own calculation

Methodology

Since the literature provides no guidance regarding what outcome might be expected for our form of analysis, we have applied two completely different approaches for estimating the employment effects of agricultural subsidies as a means of increasing confidence in the results. The two approaches can be summarised in terms of the following two scenarios.

In **Scenario 1**, we investigate the effect of reduced income for primary sector enterprises as a result of abandoning all direct agricultural and forestry subsidies, with all other factors remaining constant. Lower income will render a higher share of primary sector labour below the break-even point, resulting in this share no longer being competitive and leaving the sector in the long run. The share is estimated under the assumption that no adjustment in the economy occurs, i.e. that neither farms nor firms in other sectors have the time to reallocate their resources. In this scenario, the resulting subsidy monies not spent on agriculture and forestry are not reapportioned to other sectors or distributed to consumers and taxpayers, whereas they may be used to pay off government debt. The latter would thus reduce interest payments, however we do not take this factor into account for the purposes of the scenario. This scenario represents a shock to the primary sector in the form of a cancellation of agricultural subsidies; the reactions by the various sectors of the economy to this shock remain unconsidered.

The corresponding partial analysis is based on the income distribution according to data of the FADN (Farm Accountancy Data Network). Detailed accounting data are available for 2,296 enterprises which employed some 3,500 unpaid labour units; these data are a representative sample of 112,435 enterprises and 152,000 unpaid labour units. Farms in the FADN represent enterprises with a standard gross margin (SGM = revenue minus variable costs) of between € 6,000 and 120,000 with less than 200 ha of land or forest and which are not managed by legal entities. These farms account for 88% of arable land and at least 93% of livestock in the agricultural sector of Austria (BMLFUW 2005).

Scenario 2 takes into account the possibility that subsidies not spent on the primary sector can be spent elsewhere in the economy, resulting in a corresponding impact there. Alternative ways to redirect these subsidy monies include: dissemination to all private sectors or to sectors other than agriculture and forestry, spending by the government to improve public services, leaving the benefit to taxpayers in the form of reduced tax rates, or dispensing the monies to consumers and thus increasing disposable income and consumption. We chose the first alternative, assuming that the savings are spent in proportion to the value of production of the various sectors in the overall economy.

Starting with an illustration of the interdependence between the primary sector and its upstream and downstream sectors, we next derive the employment effects in all sectors resulting from a change in demand for agriculture and forestry products. On the basis of an input-output-table of the Austrian economy, this analysis can be extended to show to what extent a redistribution of funding will be reflected by a redistribution of jobs in the various sectors and, incidentally, a loss of jobs overall.

Under the strict assumption of a fixed technology coefficient, an input-output-analysis allows for an estimation of the effects on employment in different sectors that result from a change in demand for domestic products. A change in demand is implemented in the model through a redistribution of agricultural subsidies across all sectors in proportion to the production value of each sector. This change in final demand induces accumulative structural changes in the economy to yield new levels of production and employment after an infinite number of adjustment steps have occurred. The resulting changes in employment are a measure of the impact of agricultural subsidies on employment in individual sectors and in the macro economy as a whole.

Input-output tables and the corresponding constant input and employment coefficients have been developed by Statistik Austria (2004); the data set includes information on production, intermediate consumption, input coefficients of domestic production, final demand for domestically produced goods, cumulative input coefficients of domestic production and long-run multipliers.

Results

Results of the partial analysis

In 2004, farm enterprises participating in the FADN received € 15,677 in subsidies on average. This sum includes market organisation payments (€ 5,978), agri-environmental payments (€ 6,481) and compensatory allowances (CA). The latter are only paid in disadvantaged areas and amount to € 2,576 on average for all farms in the FADN (BMLFUW 2005b, 223). Farm income in 2004 averaged € 19,381 per enterprise, which translates to € 14,341 per unpaid labour unit.

Because public subsidies are a supplement to the revenues from market sales, they can be spent on inputs for ongoing production processes. Inasmuch as they do so, they are linked with production; however, the incentive to use them in this way has decreased as market organisation payments have been largely decoupled from production since 2005. Nevertheless, in our analysis we assume these payments to fully impact farm viability as a portion of farm revenues.

Direct payments make up in average 81% of the revenues of farms who participate in the FADN in 2004. If farms lose these subsidies while their costs remain constant, the number of farms missing their break-even point (i.e. whose revenues fall short of their costs) will go up, as will the number of unpaid AWUs who fall short of the required threshold income. The number of AWUs thus affected can be inferred from the distribution of farm incomes with and without direct payments (Figure 3).

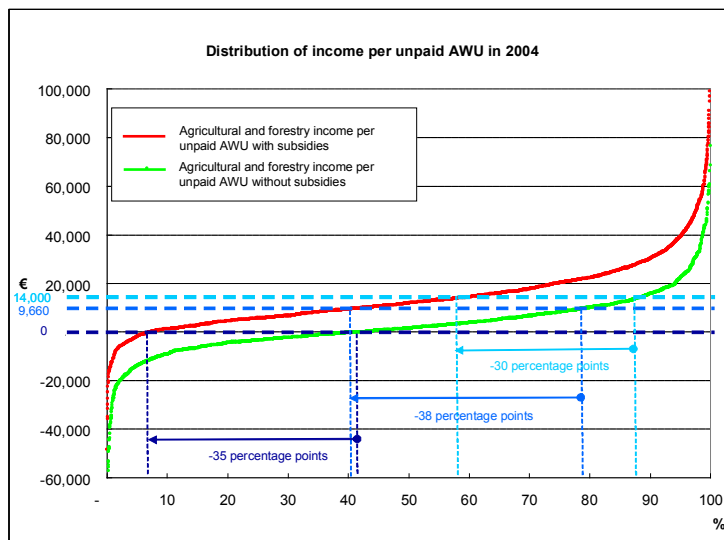


Figure 3. Distribution of income from agricultural and forestry activities per unpaid AWU with and without direct payments, 2004

The share of unpaid farm workers who earn negative incomes is about 7%, this share increases to 42% in the absence of farm subsidies. Accordingly, 35% or 52,500 of unpaid farm workers depend on direct payments for a positive income. If we take the poverty line with € 9,660 per year as a benchmark for the minimum value of farm labour, public payments support 38% or 57,100 of AWUs to yield a revenue above poverty level.

If we consider a monthly income of € 1,000 (€ 14,000 per year in Austria) to be the required income for securing a job in agriculture, 88% of AWUs would be beneath this level without subsidies. Public monies can reduce this share by 30 percentage points to a share of 58%. In the case of this benchmark, direct payments moved 45,300 unpaid AWUs above the necessary income level, and thus “saved” this number of jobs (Table 4).

The strong impact of direct payments on employment in agriculture and forestry in Austria is due to the rather flat distribution of income in the portion of this sector which is covered by FADN. As the data in Table 4 demonstrate, 83% of unpaid AWUs (126,300) earned less than the average income in Austria, and 58% earned less than € 1,000 per month. Without subsidies, these shares would increase to 96% and 88%, respectively.

In summary, it can be stated that farm subsidies boost employment by some 45,000 to 57,000 unpaid AWUs in the short run, a number which amounts to approximately one third of the self-employed labour force in the sector. Since most of these subsidies are uncoupled from production, and even more so since 2005, they are certainly not responsible for an equal share of agricultural

production but contribute substantially to environmental objectives and the maintenance of farmland and settlements in disadvantaged rural areas.

Table 4. Number of unpaid AWUs in agriculture and forestry and the effects of subsidies on their minimum income

Income for agricultural and forestry activities per unpaid AWU in €		Number of unpaid AWUs			Share (in %) of total number of unpaid AWUs		
per month	per year	without direct payments	with direct payments	Difference	without direct payments	with direct payments	Difference
negative	< 0	63,100	10,600	-52,500	42	7	-35
< 690 *	< 9,660	119,600	62,500	-57,100	79	41	-38
< 1,000	< 14,000	133,600	88,300	-45,300	88	58	-30
< 1,200	< 16,800	137,600	99,100	-38,500	91	68	-23
Average income **	< 24,400	145,700	126,300	-19,400	96	83	-13
Total	-	152,000	152,000	-	100	100	-

* as a benchmark of poverty in 2005 (Obinger & Tálos 2006, p. 191 et seq.)

** according to income tax statistics

A loss of subsidies would kick-start a chain reaction in the sector. Farmers would have to adapt by lowering expenditures for variable inputs, capital investments and labour. A reduction of labour input would in turn reduce the number of AWUs, who must depend on the enterprises' profits to meet their living costs. Importantly, these adjustments will additionally cause a reduction of production, and thus a further reduction of revenues and income. The following scenario takes account of these long-term adjustments.

Results of the analysis of macro economic effects

The Economic Accounts for Agriculture in 2000 show that 52% of the total production value of agriculture at cost prices (i.e. producer prices + goods subsidies – taxes on goods, as opposed to simply basic prices) was spent for intermediate inputs, while another 25% was used to buy investment goods and support jobs in this sector. Since agriculture produces and supplies inputs to the food industry, it supports even more jobs there. A detailed illustration of the interrelations among the different up- and down-stream branches of the Austrian national economy is provided by the input-output-table at cost prices for 2000 (Statistics Austria 2004). This table is either a “goods by goods” or “sector by sector” matrix and shows the input structures which correspond with the production of a good (or sector).

Employment created by primary sector demand. The highest amounts spent by agriculture and forestry flow to the sectors “production of real assets” (€ 636 m, or 45%), “trade” (€ 362 m, or 26%) and “health care and social security” (€ 90 m, or 6%). Overall, the “use” of the primary sector amounts to the spending of € 1,419 m. In the short run, this demand for inputs by the primary sector is met by the employment of approximately 12,000 Annual Work Units (AWUs) who produce inputs to agriculture and approx. 1,000 AWUs who supply inputs to forestry. In sum, 13,058 AWUs (0.4% of all AWUs) depend on primary sector demand for intermediate inputs.

Employment created by primary sector supply. The major portion (90%) of primary production value flows to the goods sector (€ 2,856 m), 8% to the accommodation and restaurant industry (€ 244 m) and 2% are dedicated to the health care and social system (€ 54 m). The value of primary products supplied to downstream industries amounted to € 3,220 m. In total, approximately 30,200 AWUs in the processing and marketing of agricultural and forestry products depend on supplies from the domestic primary sector. 88% of these AWUs directly depend on agricultural supply.

Direct employment effects of the primary sector. Summing up the direct employment effects of primary sector supply and demand on other sectors of the economy yields a total of some 42,600 AWUs (1.31% of all AWUs) who directly depend on agriculture and forestry. In absolute numbers, the goods production sector, the accommodation and restaurant industry and trade are the most dependent branches. However, in relation to overall production within these sectors, agriculture and forestry are most important to the goods production sector, the accommodation and restaurant industry and the energy and water supply sector (Table 5).

Table 5. Direct employment effects of supply and demand in the primary sector

Sector	AWU number	AWU induced by agriculture number in % of sector	AWU induced by forestry number in % of sector	AWU induced by primary sector number in % of sector
B Fishery	265	0	0	0
C Mining	7,564	20	5	25
D Production of real assets	641,591	25,277	3,175	28,452
E Energy and water supply	30,555	222	197	419
F Construction industry	284,202	614	363	977
G Trade	549,242	4,025	52	4,077
H Hotel and restaurant industry	215,877	3,938	182	4,120
I Transport and information transmission	242,430	710	18	728
J Credit system and insurance industry	109,543	158	97	255
K Real estate business, services for companies	302,321	414	0	414
L Public administration	232,021	83	41	124
M Educational system	185,781	195	0	195
N Health care and social system	293,757	2,779	0	2,779
O Other public and private services	159,430	74	10	84
P Private households	5,795	0	0	0
Total	3,260,374	38,509	4,140	42,649

Source: Statistics Austria 2004; own calculations

Table 6. Number of AWUs, production value and employment coefficients of different sectors

Sector	No. of AWUs (domestic production)	Production value at basic prices (m €)	Direct employment coefficient
Agriculture	135,858	4,710	28.85
Forestry	18,033	1,740	10.37
Fishery	265	18	14.72
Total primary sector	154,156	6,468	23.83
Total other sectors	3,260,109	356,323	9.15
Total	3,414,265	362,791	9.41

Source: Statistics Austria 2004; own calculations

Employment effects of a redistribution of agricultural subsidies to other sectors. In order to calculate the employment effects of a redistribution of subsidies to other sectors firstly the sectoral employment coefficients have to

be identified (Table 6). Agriculture stands out for having the highest direct employment coefficient of all sectors: it uses almost 29 AWUs for the production of € 1m. A similarly high employment coefficient applies to “other services”, “retail” and “health” follow with 19 AWUs/€ 1m. Due to low labour productivity the employment effect of agriculture is three times higher than the mean of all other sectors.

Table 7. Changes in employment and production caused by the aliquot redistribution of agricultural subsidies for the year 2000

Sectors	Change of employment in 1,000 AWUs	New output value in bn €	Former output value in bn €	Change of output value in bn €
Agriculture	-44.2	3.2	4.7	-1.5
Food industrv	-2.9	11.4	11.7	-0.3
Forestrv	-0.5	1.7	1.7	0
Total of shrinking sectors	-47.6	18.9	20.8	-1.9
Credit svstem	1.3	14.1	13.9	0.2
Real estate business	0.3	24.6	24.5	0.1
Services for companies	1.5	17.3	17.2	0.1
Building industrv	1.1	29.3	29.2	0.1
Public administration	1.1	16.9	16.8	0.1
Information transmission	0.5	8.4	8.3	0.1
Education	0.8	11.5	11.4	0.1
Wholesale trade	0.4	21.8	21.7	0.1
Total of all sectors	-33.2	362.7	362.8	-0.1

Source: Statistics Austria 2004; own calculations

A decrease of agricultural subsidies makes money available for redistribution to other sectors. In the following scenario, the subsidies withheld from agriculture in the amount of € 1.6 bn are allocated to all sectors in proportion to their value of production. We used the average values for 2004 and 2005 for: area, animal and product premiums (€ 630 m), agri-environmental payments (€ 670 m), compensatory allowances (€ 300 m). This added up to € 1.6 m in agriculture-related subsidies. The forestry related subsidies amounted to € 0.03 m on average (BMLFUW 2005b, 242).

Table 7 shows the long-term effects of this scenario. Here we used the average values for 2004 and 2005 for: area, animal and product premiums (€ 630 m), agri-environmental payments (€ 670 m), compensatory allowances (€ 300 m). This added up to € 1.6 m in agriculture-related subsidies. The forestry related subsidies amounted to € 0.03 m on average (BMLFUW 2005b, 242). The strongest decline occurs in the primary sector, which loses some 45,000 full-time jobs. Another 3,000 jobs, approximately, are lost in the food industry (goods sector). On the other hand, there are sectors in which the number of jobs increases, albeit only marginally. Overall, only a quarter of those who lose their jobs find employment in a different sector. The net effect on employment in the macro economy is negative: The total number of AWUs drops by approximately 33,000, while the value of overall output declines slightly.

Conclusions

Our study has evaluated the effects of direct payments to agriculture and forestry on employment in Austria. For this purpose we have conducted a partial analysis of the effects on agriculture and forestry on the one hand, and, on the other, an analysis of the national economy, in order to evaluate the overall effects on the employment structure in Austria.

The partial analysis reveals that subsidies save 40,000 to 50,000 AWUs in Austria's primary sector. The national investigation using input-output analysis shows that, if an amount equal to that spent for agricultural subsidies were to be disseminated among all sectors, 45,000 AWUs in the primary sector would be lost. At the same time, the employment rate in other sectors would increase, however a total of 33,000 jobs would still be lost.

We thus conclude that subsidies for agriculture and forestry are a better use of the monies in question, in terms of Austria's national economy reaching the highest possible level of employment and at the same time achieving other aims such as keeping settlement in peripheral regions and maintaining the landscape also for the advantage of other sectors (e.g. tourism). Certainly, one reason for the relatively high absorption capacity of the primary sector is the low income level as compared to other sectors. Future political endeavours should attempt to find possibilities for shifting agricultural workers to jobs with higher remuneration. However, a reduction in agricultural subsidies cannot be the solution, as the living conditions of many people already living at or below the poverty level would only worsen further.

References

- AWI - Federal Institute of Agricultural Economics (2009): Green Report table 5.1.4. - First and second pillar of the Austrian agricultural budget according to the CAP 2000-2008. In: www.agraroeconomik.at/fileadmin/tabellen/Tab_50104_Auszahlungen_Saeulenmodell.xls.
- BMLFUW - Federal Ministry of Agriculture, Forestry, Environment and Water Management (2005a): Evaluierungsbericht 2005 (Evaluation Report 2005). Vienna.
- BMLFUW - Federal Ministry of Agriculture, Forestry, Environment and Water Management (2005b): Grüner Bericht 2005 (Green Report 2005). Vienna.
- BMLFUW - Federal Ministry of Agriculture, Forestry, Environment and Water Management (2008): Evaluierungsbericht 2008 - Ex-post-Evaluierung des Österreichischen Programms für die Entwicklung des ländlichen Raums (Evaluation Report 2008). Vienna.
- Obinger H.; Tálos, E. (2006): Sozialstaat Österreich zwischen Kontinuität und Umbau. Verlag für Sozialwissenschaft. Wiesbaden.
- ÖROK - Österreichische Raumordnungskonferenz 2004 (Austrian Conference on Spatial Planning 2004): 2004 - 1 Atlas, Vienna.
- Statistics Austria (1991, 2001): Population Census 1991, 2001.
- Statistics Austria (2004): Die Input-Output-Tabelle 2000 (The Input-Output Table 2000). Verlag Österreich, Vienna.