

Efficiency analysis of agricultural sector in Latvia compared to other EU countries, based on FADN data

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Summary

In the conditions of the EU single market of commodities, services and labour the matter of production competitiveness in the European scale is very important also for Latvian agriculture. It is essential that Latvian farmers could ensure efficient production at sufficiently low cost level. The objective of the research performed was to reveal the strengths and weaknesses of Latvian agriculture in terms of their cost structure, by analysing the economic information of agricultural holdings, using FADN standard results.

The research was performed mainly using the methods of statistical analysis and logically constructive analysis.

The analysis enables the assessment of the efficiency of agricultural production in Latvia currently, as well as ensures the awareness about the opportunities for the increasing of production efficiency.

When comparing the cost level in Latvia and in 14 selected EU countries, Latvia has one of the highest level of intermediate consumption, while the most crucial is low level of general production efficiency, measured as value added per work unit (AWU). This indicates that there is a lack of modern technologies, which presumes also higher labour productivity.

In the light of comparatively lower labour remuneration and land use costs which ensured the production with smaller necessary capital intensity, agricultural production in Latvia has been competitive in the first years after joining the EU. But due to the envisaged increase in these costs the competitiveness could be lost in next 2-3 years. In order to avoid this, the efficient use of the resources becomes crucial.

Key words: efficiency of agricultural production, revenues, costs, the value added, economic size, subsidies.

Concepts used in the research:

1) value added – the product value created by factors of production (labour, land, capital, enterprise) which provides income for the owners of separate factors; the net value added = production output + subsidies – production taxes – intermediate consumption – capital consumption;

2) production output – the value of produced goods and services at market prices;

- 3) subsidies – in this paper are treated as subsidies which constitutes the income of the current year, that is the subsidies related to the particular year and being relevant to agricultural activities or the utilization of resources (land etc.), except investment subsidies;
- 4) intermediate consumption – the value of goods and services used in the process of production, except capital consumption and compensation for employees
- 5) external costs –compensation for employees, rents and interest
- 6) agricultural work unit – the measurement unit of labour consumption: it corresponds to 1840 work hours of full time employed person within the sector. One person cannot constitute more than one unit even if there is more work accomplished
- 7) European size unit – the measurement unit of economic size of farms. One Europeans size unit (ESU) corresponds to the standard gross margin (SGM) of EUR 1200. The standard gross margin is the production value minus variable production costs of this production at local prices. For the year 2004 it is calculated in the prices of the years 1999-2001.

Abbreviations

ESU – European size unit

EU –European Union

Eurostat –Statistical Office of the EU

LSIAE (LVAEI) – Latvian State Institute of Agrarian Economics

AWU– agricultural work unit

UAA –utilised agricultural area

LU – livestock unit

NVA – net value added

CAP – Common Agricultural Policy

SAPARD – Special Action Programme for Agriculture and Rural Development

FADN –Farm accountancy data network

Introduction

In recent years, especially starting from the year 2002 when practical implementation of the *SAPARD* program started, significant efforts have been put for the modernization of agriculture and its related processing sectors. As the result the production efficiency has grown contributing to the improvement of the sector competitiveness. Despite this, the value added per employed person in the sector in Latvia still lagging substantially behind the average level of the EU countries.

Following the overall tendency in Latvian labour market– fast increase in labour costs, the manufacturers of the agriculture originated products must search also for other opportunities apart from further

investments in the modernization of the technological process of production in order to increase the competitiveness of their production.

When analysing the activities of the Latvian agricultural sector and their value adding productivity till now, a hypothesis was set, that due to the comparatively low resource utilization efficiency the development of several subsectors of agriculture and also the overall utilization of available production potential are bothered, so lowering the overall competitiveness of the country, and especially its rural regions.

The objective of this study is to analyse the indicators of economic efficiency of Latvian agriculture and its main subsectors in comparison with those of other EU countries in order to reveal the strengths and weaknesses in the revenues-costs structure, consequently discovering the possible reserves for increasing of production efficiency in the sectors.

In order to reach this objective the following tasks were set:

- ◆ to analyse the physical and economical size of agricultural holdings in Latvia and other EU countries;
- ◆ to compare the level and structure of production costs for agricultural products, as well as cost/revenues ratios;
- ◆ to analyse the role of subsidies in the revenues of agricultural holdings and in the net value added;
- ◆ to compare the absolute and relative quantities of the net value added in the farms of the main specialization types;
- ◆ to indicate the main areas, where the increasing of production efficiency could be possible, on the basis of research results obtained.

Methods of statistical analysis and logically constructive analysis are used in the research. The conclusions fall out of the research performed.

Within the framework of the research, the production value (at market prices), production costs and subsidies are analysed in separate stages of resource production and processing. The cost analysis is done in farms of different types of specialization, considering the total costs (intermediate consumption, capital consumption and external costs) as well as examining the items of intermediate consumption separately.

In this research, the operating results of FADN farms are analysed separately according to the types of specialization:

- ◆ field crops (cereals, oilseeds and fibre plants, protein crops and other arable crops);
- ◆ grazing livestock (production of milk, cattle, sheep, goats, other grazing animals);
- ◆ granivore (production of pigs, poultry and rabbits).

Comparing to the EU countries, the production of the value added in the agriculture of Latvia is analysed using the standardized FADN results for the year 2004. The comparison is made against 15 EU countries – France, the Netherlands, Denmark, Finland, Sweden, Hungary, Austria, the Czech republic, Italy,

Ireland, Greece, Cyprus, Luxemburg and Portugal, for which the necessary information was available in the public data base of the Eurostat.

The Standardized FADN results comprise agricultural holdings of the economic size above 2 European size units (ESU). In such farms in Latvia, about 70% of agricultural production is produced, while these farms constitute only 16% from the number of active farms. The EU usually sets the threshold of FADN farms on the level, that comprises at least 90% from the overall standard gross margin in the country; therefore, looking at the results, one should take into account, that the group of comparatively largest Latvian farms is comprised here – in order to include farms, which produce for the market.

The results are analysed for all types of farms, as well as for the farms of the above-mentioned types of specialization.

1 Economic size of farms

In 2004, the average economic size of all (all types of specialization) FADN farms in Latvia is 10.1 ESU. In comparison with the EU countries, for which the information is available in the Eurostat data base (further – group of countries), it corresponds to the group of countries in the south of the continent – Greece, Portugal, Cyprus, where the average economic size of farms is 9.4-11.5 ESU, but in most of countries this level is 2-4 or even more times higher (table 1). However, per 1 ESU, Latvian farms should produce larger amount of products, because this indicator is affected also by the level of prices in a respective country (and it has been lower in Latvia in order to reach similar economic size).

The field crops specialization farms in Latvia are larger than farms of other types of specialization - 17,1 ESU against 10,1 of average. Several countries in the group (including Finland, Italy, Luxemburg, Hungary, etc.) have the economic size of field crops specialization farms that could be comparable with Latvia.

In terms of the land used and labour contribution, Latvian field crops specialization farms even exceed the average levels of other countries. Latvia has the second largest size of utilised agricultural area (UAA) (110 ha on average), and also labour contribution (2.5 agricultural work units (AWU)) is the second biggest beside the Czech Republic. Consequently, the level of labour used per UAA, in Latvia is comparable to the other EU countries.

So the conclusion can be made that **comparatively smaller economic size in Latvia is not because of smaller physical size of farms being specialized, but due to worse of production/resource price ratio or due to the inefficient use of resources**, which is also an object of further analysis in the research.

The grazing livestock specialization is where the average economic size of farms in Latvia falls behind the EU noticeably. **On average, the economic size of grazing livestock specialization farms is only 6,8 ESU, which is for 6 times less than the average level in the group of countries.**

Considerable reason for so low indicator is the low purchasing price of cattle and milk in 2000, because currently used indicators of standard gross margin (SGM) were calculated in the prices of 2000. However,

also the average number of cattle (26.6 LU) is at least two times less than in the group of countries of the EU-15 on average, although in several other EU countries (Austria, Portugal, Greece) is similar to Latvian indicators. The granivore specialization farms typically have the largest economic size comparing to farms of other specialization types in EU, as well as in Latvia. Although their average economic size in Latvia is almost a twice less than in other countries (63 ESU against 114 ESU), it exceeds the respective indicator in Hungary, Austria and Portugal. Nevertheless, the number of livestock per ESU in Latvia is comparable to the other countries in consideration, while the labour consumption in Latvia is significantly higher.

The data of average economic size of farms are summarized in the Table 1

Table 1

The average economic size of FADN farms in 2004, ESU (standardized results)

| Country | On Average | Field crops specialization | | | Grazing livestock specialization | | | | Granivore specialization | | |
|--------------------|-------------|----------------------------|-------------|-------------|----------------------------------|-------------|-------------|-------------|--------------------------|-------------|--------------|
| | ESU | ESU | AWU number | UAA (ha) | ESU | AWU number | UAA (ha) | LU (number) | ESU | AWU number | LU number |
| The Netherlands | 140.4 | 93.5 | 1.91 | 55 | 106.8 | 1.54 | 40.7 | 105.2 | 133.3 | 1.69 | 521.1 |
| The Czech Republic | 109.9 | 65.5 | 4.4 | 179.5 | 43.4 | 6.19 | 225.4 | 112 | 221.1 | 10.95 | 699.1 |
| Denmark | 97.7 | 46.9 | 0.86 | 60.2 | 128.5 | 1.76 | 86.4 | 138.4 | 254.6 | 2.7 | 531 |
| France | 75.9 | 80 | 1.58 | 101.9 | 50 | 1.57 | 75.5 | 80.2 | 116.2 | 2.02 | 434.9 |
| Luxemburg | 60.8 | 21 | 1.19 | 58.8 | 62.8 | 1.68 | 85.8 | 107 | - | - | - |
| Sweden | 36.3 | 21.6 | 0.76 | 54.3 | 42.6 | 1.95 | 41.8 | 35.6 | 87.1 | 1.92 | 157.7 |
| Italy | 28.6 | 23.8 | 1.26 | 25.3 | 51.1 | 1.81 | 37.9 | 62.9 | 158.5 | 3.82 | 688.2 |
| Austria | 27.2 | 28.4 | 1.24 | 50 | 22.8 | 1.66 | 22.3 | 26.2 | 46.4 | 1.5 | 79.6 |
| Ireland | 22.5 | 53.2 | 1.19 | 71.6 | 20.4 | 1.15 | 39.6 | 49.6 | - | - | - |
| Hungary | 17.1 | 17 | 1.45 | 67.5 | 18.6 | 2.03 | 53.5 | 50.1 | 42.2 | 4.89 | 188.4 |
| Cyprus | 11.5 | 19.1 | 1.53 | 24.6 | 28.5 | 1.74 | 16.5 | 40.4 | 72.3 | 5.5 | 551.6 |
| Portugal | 10.8 | 19.3 | 1.52 | 30.2 | 16.8 | 1.48 | 32.3 | 26.8 | 60.2 | 2.39 | 223.7 |
| Latvia | 10.1 | 17.1 | 2.49 | 110 | 6.8 | 2.33 | 55.9 | 26.6 | 63.1 | 7.3 | 244.1 |
| Greece | 9.4 | 10.5 | 0.99 | 10 | 14.3 | 1.62 | 5.8 | 28.3 | - | - | - |
| <i>On Average</i> | <i>35.5</i> | <i>32.6</i> | <i>1.27</i> | <i>44.1</i> | <i>41</i> | <i>1.57</i> | <i>46.7</i> | <i>59.3</i> | <i>113.7</i> | <i>2.68</i> | <i>387.2</i> |

Source: LSIAE calculations based on Eurostat and FADN data

2 Comparison of the production costs and their structure

Comparing the level of costs in Latvia and in the selected countries, one can conclude that Latvia has one of the highest levels of production costs per ESU- it exceeds the average level of considered countries by 50%. Also the structure of costs is different: Latvian farms have larger density of intermediate consumption, what constitutes 77% from the total costs, in comparison with other countries with 64% on average. But the share of intermediate consumption in output value in Latvia is 77%. The larger one is only in Finland (88%) and Sweden (78%), but on average it is 56%.

In the terms of costs structure, Latvian farms have a noticeably larger share of feed (28% from total costs against 18% on average) and energy (15% against 6%). External costs have smaller share (11% against 19%), including the land rents (1% against 5%). Also, there is smaller capital consumption indicator - 12% in Latvia against 17% on average.

However, it must be observed that the overall costs in Latvia are comparatively lower due to lower external costs (compensation for employees, land rent, interest), as well as smaller capital consumption in connection with smaller share of long-term investments. But during last years also these cost items are increasing rapidly, therefore Latvia loses this advantage rapidly.

In its turn, the share of intermediate consumption in the value of production output in Latvia is higher than in other countries, especially in field crops specialization farms (69% against 57% on average). Only Finland and Sweden have worse results, but similar share as in Latvia is in the Czech Republic. In grazing livestock specialization situation is similar, a little bit better situation is in granivore specialization farms.

Compared to the other countries, energy costs in Latvia have a larger share in the structure of overall costs (in the field crops specialization 17% against 7%, but in the grazing livestock specialization – 14% against 5%). In the granivore specialization farms much greater share than in other countries falls on feed (41% against 30% on average). But in Latvian field crops specialization farms relatively high is the share of fertilizer costs, which reaches 13% against 9% in other countries, while the share of the rest of direct costs (seeds, plant protection products) is similar to other countries.

3 Farm revenues and the net value added

Revenues from the market and subsidies

In FADN farms of Latvia the revenues from the market are enough for covering the costs – the ratio of revenues and costs is 1.01. Although in other countries on average this proportion is 1.14, but in approximately half of the countries in the group compared the market revenues do not cover costs. The largest deficit is in Finland (0.75), Sweden (0.84) and Denmark (0.93). The best revenues/costs ratio is in southern countries – in Greece and Italy. But, for example, in France this ratio is similar to Latvia – 1.02.

The intensity of production can be measured by output value per employed person. Calculating per annual work unit, the output value in Latvia is the lowest one among the countries included for the comparison. It is also 4-5 less than the average indicator.

The level of subsidies in various countries of the EU differs very much. For example, in the Netherlands and the Czech Republic the output value in a farm on average is almost the same, the amount of subsidies in the Czech Republic is 4 times higher. The share of subsidies in revenues is in the range from 3% in the Netherlands to 40% in Finland. Latvia with its 24% has a place among the most subsidized countries, though the amount of subsidies per work unit is quite low, that is mainly due to the comparatively large labor consumption in agriculture.

The share of subsidies in the structure of revenues in some countries of the EU is very different also according to the types of specialization. In Latvia, the share of subsidies constitute 25% from the overall revenues for field crops specialization farms, in the grazing livestock specialization farms - 23% (it exceeds for some % the average indicator), but in the granivore specialization farms – 2% (against 4% on average).

The net value added

The most common indicator of farm labour efficiency used is net value added (NVA) and its attribution to the consumption of labour. In Latvian farms total NVA per farm has reached 13 581 EUR on average in 2004, which exceeds the indicators of Portugal, Cyprus and Greece, while by 1.5 times falling behind Hungary, two times – from Finland, Sweden, etc. (Table 2). The absolute value of the net value added in field crops specialization farms in Latvia constitutes 2/3 from the average indicator in other countries, but in other types of specialization – it is a little bit under 50% from the average). In some countries the indicator is even smaller, for example, in in Finland the field crops farms have the net added value by 25% less than it is in Latvia.

In its turn, the net value added per one full-time employed person in Latvia (5 652 EUR) was the lowest among the analysed group of countries and it falls behind from Cyprus, Hungary and the Czech Republic for almost two times. But in the northern countries – in Finland and Sweden – the net value added per one full-time employed is almost four times higher than in Latvia.

By the types of specialization, in Latvia the net value added is the highest for field crops specialization farms – 8200 EUR per work unit, although it is almost three times less than in other countries on average. (Table 2)

In its turn, in the grazing livestock specialization farms, as well as in the granivore specialization farms the net value added per employed person in Latvia is lower than in other mentioned countries. This group of farms also has the largest differences from the average indicator. This is connected with comparatively large consumption of labour in the farms of this specialization type. Comparing, for example, the

Netherlands and Denmark, in the Latvian granivore specialization farms the ratio net value added/agricultural work unit is 10 times smaller, but in the grazing specialization farms – 7 times smaller. The low level of the net value added per employed person is an essential problem, because this directly affects the income of farmers and the competitiveness of the sector.

Table 2

The net value added in agriculture on average and by types of specialization, 2004

| Country | Average in agriculture | | | Field crops specialization | | Grazing livestock specialization | | Granivore specialization | |
|--------------------|------------------------|----------------|-----------------------------------|----------------------------|----------------|----------------------------------|----------------|--------------------------|----------------|
| | NVA (EUR) | NVA /AWU (EUR) | The share of subsidies in NVA (%) | NVA (EUR) | NVA/ AWU (EUR) | NVA (EUR) | NVA/ AWU (EUR) | NVA (EUR) | NVA/ AWU (EUR) |
| The Netherlands | 96892 | 38132 | 10 % | 56261 | 29517 | 67652 | 43882 | 89229 | 52653 |
| The Czech Republic | 94434 | 9706 | 42 % | 52275 | 11882 | 59514 | 9621 | 86815 | 7932 |
| Denmark | 64476 | 44320 | 41 % | 35712 | 41710 | 85204 | 48540 | 141436 | 52334 |
| France | 49221 | 25459 | 53 % | 45240 | 28706 | 32361 | 20628 | 44382 | 22018 |
| Luxemburg | 56096 | 32887 | 68 % | 19273 | 16205 | 55663 | 33060 | - | - |
| Sweden | 28491 | 20084 | 103 % | 22109 | 22978 | 34180 | 18824 | 25769 | 16106 |
| Finland | 29660 | 19576 | 139 % | 15412 | 20220 | 37633 | 19254 | 51237 | 26737 |
| Italy | 35764 | 25007 | 19 % | 40254 | 31842 | 51134 | 28304 | 251321 | 65850 |
| Austria | 30908 | 18913 | 62 % | 38807 | 31250 | 25913 | 15579 | 32245 | 21483 |
| Ireland | 22501 | 19323 | 69 % | 43148 | 36136 | 20803 | 18076 | - | - |
| Hungary | 18111 | 9652 | 49 % | 20446 | 14056 | 15782 | 7763 | 46743 | 9555 |
| Cyprus | 11675 | 9247 | 50 % | 11417 | 7456 | 44718 | 25755 | 117544 | 21365 |
| Portugal | 8457 | 5830 | 50 % | 16215 | 10693 | 12982 | 8759 | 29931 | 12503 |
| Latvia | 13581 | 5652 | 61 % | 20441 | 8200 | 15058 | 6476 | 37011 | 5073 |
| Greece | 12116 | 9857 | 33 % | 10166 | 10302 | 19439 | 11984 | - | - |
| <i>On Average</i> | <i>31432</i> | <i>20066</i> | <i>37 %</i> | <i>30464</i> | <i>23999</i> | <i>33088</i> | <i>21065</i> | <i>86878</i> | <i>32412</i> |

Source: LSAIE calculations based on Eurostat and FADN data

Important indicator is the share of subsidies in the net value added. In Latvia it is higher than in other countries on average (61% against 37%), but the comparatively low average percentage indicator is ensured by the southern countries and the Netherlands, for the countries in the average latitude, in its turn, the share of subsidies in net value added is comparable with the indicator of Latvia. In Northern countries

– in Finland and Sweden – the indicator is higher – respectively 139 % and 103%. It shows that the net value added is completely ensured by subsidies in these countries.

Comparing the share of subsidies in the net value added in various types of specialization, there are no significant difference between the indicators of Latvia and other countries. In field crops specialization, it is comparatively higher in Latvia – 67% against the average 54%. The subsidies' importance in grazing livestock specialization farms is close to the average – 57% against 55%, but in granivore specialization it is under the average level – 11% against 16%.

Conclusions

Comparing the operating results of FADN farms in Latvia according to the types of specialization, several conditional strengths, as well as weaknesses have been marked in farm economics.

◆ The economic size of farms in Latvia is noticeably smaller than in other countries of similar climate zone. In its turn, the physical size of farms covered by FADN in Latvia is one of the largest in the EU in terms of land area and labour consumption, but one of the lowest according to the livestock number. It shows that the land and labour resources in Latvia are utilized less intensively which might be a positive factor from the point of view of ecological and other aspects, though it lessens the economic efficiency of the production.

◆ The overall share of costs in production output in Latvia is similar to other EU countries taken for the comparison. Though Latvia has a larger share of intermediate consumption (especially, comparatively high level of several positions of direct costs, firstly energy costs in total, in the field crops specialization – fertilizers and in granivore specialization – costs of livestock feed), but smaller share of external costs and capital consumption. Consequently, while the labour and land costs are increasing and also the investments are rising, this can negatively affect the overall competitiveness of farms in Latvia. Therefore the question about the decrease of the intermediate consumption costs per unit of production is very essential. It becomes even more important because of the comparatively low share of the external costs of production (wages, rents, interest payments) in the structure of the overall costs which currently positively affects the share of overall costs against the production output and ensures the competitiveness of the export of resources, for example, in the sectors of milk, cereals and rape. However these costs have a tendency to increase and, consequently, the competitiveness could be lost in further 2-3 years.

◆ Revenues from the market in Latvian farms were able to cover costs in the considered period, unlike such countries as Finland, Sweden and Denmark where the deficit is covered by subsidies.

◆ The level of subsidies in Latvia (if calculating per production value) is a little bit higher than the average level in the analysed EU countries, though it falls behind noticeably if calculating per utilised agricultural area and per agricultural work unit.

◆ The net value added in Latvia created per farm on average constitutes about 43% from the average indicator of other countries. Comparatively higher this value is in the field crops specialization farms –

67%. The net value added per ha of the UAA and AWU constitutes only about 25% from the average of other countries without significant differences according to types of specialization. Whereas per livestock unit the net value added is comparatively high – 101 % of the average in the grazing livestock specialization farms and 68% in granivore specialization farms. It shows that in Latvia there are many land and labour resources used per livestock unit.

◆ More objective comparison of economic size would be possible if this indicator would be calculated by using the prices of the production and resources of the year 2005, because the currently used prices are outdated. Despite this, the analysis of the efficiency of agricultural production in Latvia in comparison with other EU countries shows that the most essential problem is the low net value added per employed person what is created by agricultural production (especially in animal production). The reserves for increasing the production effectiveness should be searched in the following positions: energy for all types of specialization, fertilizers for crop production and feedstuffs for grazing livestock farms;

◆ Comparison with Finland and Sweden shows that in order to preserve the agriculture in such climatic conditions it needs larger support from the state than for the EU on average. Without state support what would compensate the higher production costs due to climatic conditions there is little chance to keep up with the competition of prices in the common EU market by having the mass product. In order to convey the production from the competitiveness of prices to the competitiveness of the factors of non-price, one should consider the development of special concept of values in the agricultural production, especially in the sectors already currently showing the features of export-oriented sectors.

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