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ASSESSING THE COMPETITIVENESS OF FARMS IN LITHUANIA

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Abstract

The aim of this paper is to present the competitiveness of the Lithuanian farms. To determine the farm competitiveness level it was used the competitiveness index. The paper proposes an economic analysis of farms and their competitiveness according to their size in the period 2011-2015. The measurement was made at the farm level and the data of Lithuanian Farm Accountancy Data Network (FADN) was employed. This analysis revealed that Lithuanian farms in the group of 20-<30 ha and farms in the group of 40 ha and larger in 2011-2015, except some years, demonstrated the competitiveness. But it was indicated the lack of development abilities of farms' up to 20 ha and 30–<40 ha over all the analysed period.

Key words**:** *competitiveness, farm, index*

INTRODUCTION

In the literature different definitions of competitiveness and no generally– accepted theoretical framework exists [3, 14]. There is no consensus in theories regarding the definition and measurement of competitiveness –either in general, or specifically in agriculture [5, 9]. Competitiveness can be defined as the ability to face competition and to be successful when facing competition. Competitiveness would then be the ability to sell products that meet demand requirements (price, quality, quantity) and, at the same time, ensure profits over time that enable the firm to thrive. Competitiveness is a relative measure [8]. There is a profusion of definitions with studies often adopting their own definition and choosing a specific measurement method.

The primary analysis of the literature of agriculture competitiveness revealed that measurement concepts are market share [1, 3, 13], productivity [2, 7, 8, 10, 11, 12], economic performance indicators [8]. According to K. Sachitra (2017) crucial components of competitiveness are productivity, market share, and profitability are traditional economic indicators which are seen as inadequate to measure competitive advantage at the firm level. According to C. Fischer et al. (2007) competitiveness may be seen as a function of two indicators: profitability and market shares as relevant competitiveness. Market share of a particular product is considered as an indicator to measure the competitiveness of a firm or industry [13]. There are many components of competitiveness of agricultural enterprises and they can be divided into different categories. One of them includes resources based factors. Traditionally in agriculture resources are linked with production factors such as: land, labor and capital [9].

In this research to determine the farm competitiveness level it was used the competitiveness index, which concept was proposed by R. Gallardo et al. (2002) and used by W. Kleinhanss (2014) in measurement of farms competitiveness in Germany. The index express the relation of income (Farm Net Income – FNI) and the opportunity costs of fixed factors owned by given farm (family labour, owned agricultural land and capital), in this study the formula was applied for Farm Net Value Added (FNVA) and denominator was extended by costs of external factors for hired labour, rented land and paid interest.

MATERIALS AND METHODS

The purpose of this research is to identify competitiveness of farms in Lithuania in 2011–2015. Competitiveness level shows the ability

of farms to develop. Farms generate income optimizing their activity under given (and future) economic, where output (prices), inputs and governmental transfers play the main role [6]. If income is greater than factor costs, farms are able to compete and stay in business, have ability to develop; otherwise they could try to adjust or go out of this activity and use the factors in other one. For the assessment of farms competitiveness the formula was used:

$$CI = \frac{FNVA}{OCF+OSL+OCC} \begin{matrix} > \\ = \\ < \end{matrix} 1$$

Where:

CI – Competitiveness Index of farm;

FNVA – Farms Net Value Added.

OC – opportunity costs of farm's fixed factors:

OCF – the costs of family and hired labour (the costs of family labour was measured as cost paid for hired labour in the same group of farm size);

OCL – owned and rented agricultural land (the costs of farm's owned agricultural land was measured as rental fee of land rented in the same group of farm size);

OCC – owned capital and interest paid (the costs of farm's owned capital was measured as interest rates (excluding land)).

When the CI>=1 it means that farm has full remuneration of owned and external factors and when CI<1 it means a partial remuneration of owned and external factors.

The measurement was made using FADN data on the period covered 2011–2015. Whether small farms perform better than large farms is still the topical question [8]. The effect of farm size on economic performance is investigated using various indicators of size, since there is no consensus on the best measure for size in agriculture. Indicators used include: total output produced; utilised agricultural area (UAA); herd size or number of cows or pigs; European Size Units; farm value added; labour used or assets and real productive capacity based on rental rate. In this research farms competitiveness is investigated using UAA (ha) indicator of size. According to UAA we use 8 groups of farms (<10 UAA, 10–<20 UAA, 20–<30 UAA, 30–<40 UAA, 40–<50 UAA, 50–<100 UAA, 100–<150 UAA, >=150 UAA).

RESULTS AND DISCUSSIONS

Farm economics performance

Productivity is a basic and intuitive measure of performance. In the competitive world, productivity is one of the key success factors [11]. FNVA main advantage as an indicator for measuring income developments lies in its relative simplicity. To account for differences in farm size FNVA is usually expressed per annual work unit (AWU), which can be seen as a measure of partial labour productivity. The average FNVA of Lithuanian farms increased by 12.7% from 2011 to 2015, mostly due to increases in agricultural output and prices. Compared to 2015, FNVA was higher just in 2012 – 14.1%. Average FNVA per AWU in the analysed period increased by around 14.9%. This slight increase was driven by the increase in FNVA, with labour input reduced by 4.7%. It was primarily influenced by an increase in agricultural output prices. The average income per AWU in farms under 50 ha remained significantly below than the gained income in all farms. The average income per AWU gained by Lithuanian farms in the group of 150 ha and larger in the period of 2011–2015 was even up to 9 times higher than in these of size up to 50 ha (Fig.1). The higher income is one of the factors which improve the level of farms competitiveness and their ability to develop.

Fig. 1. Farm net value added per AWU by farm size in 2011–2015 (EUR)

Source: Own calculation on the basis of data from FADN data base 2011–2015.

In the FADN survey, the average number of workers employed per farm in Lithuania stood at average 1.9 AWU in 2011–2015. However, the figure varied across farms by their size, average in 2011–2015 ranging from 1.5 AWU in farms under 30 ha to 2.1 AWU in farms

group of 100–< 150 ha and 3.6 AWU in farms group of >= 150 ha. A significant part of the labour force employed in agriculture is family labour. Family labour as a proportion of total labour represents the prevalent form of labour in most farms with the exception of largest farms in group of >=150 ha. As Fig. 2 shows, the average proportion of paid labour in the total labour force in 2011–2015 in this group was 62.8%. The share of own labour dropped along with a growth in size of farm. In the class up to 40 ha there was at least 60% share of own labour in total labour inputs. For the farm abilities to compete it is seen that the cost of labour (paid and unpaid) per UAA was highest in smallest (<10 ha, 10–<20 ha) and largest farms (100–<150 ha and >=150 ha). This reflects smallest farms have the higher values for paid and unpaid labour than average in all farms and generate less FNVA per AWU, that in turn lead to their competitiveness level decline.

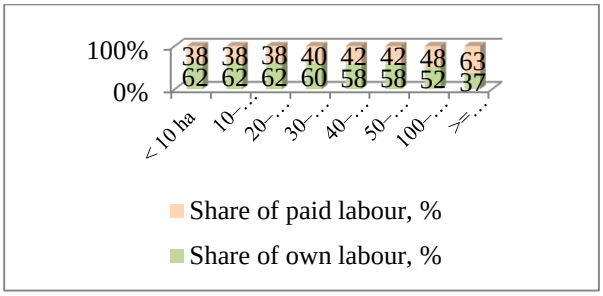

Fig 2. Proportion of labour input in 2011–2015 (paid and unpaid labour)
Source: Own calculation on the basis of data from FADN data base 2011–2015.

For most farm types access to agricultural land is a precondition for economic activity. Fig. 3 shows the ownership of agricultural land. The share of rented land shows an upward trend along with a size of farm (in UAA). However, the cost of land rented varied across farms by their size, average in 2011–2015 in the smallest farms group (under 10 ha) and in the largest farms group (>=150 ha) more than 20 percent higher and in farms group by size 30–<40 ha 22 % lower than the average in all farms.
The value of assets per AWU correlated with the size of farm. Asset value in farms in the group of <=150 ha was highest – 4.9 times higher than in farms under 30 ha. The differences were not so varied among farms by size under 30 ha. In the remaining classes it included in the range from EUR 23.2 thou. per AWU (<10 ha) to EUR 29.7 thou. (30–<40), as compare to farms size 50–<100 ha value of assets was EUR 132.0 thou.

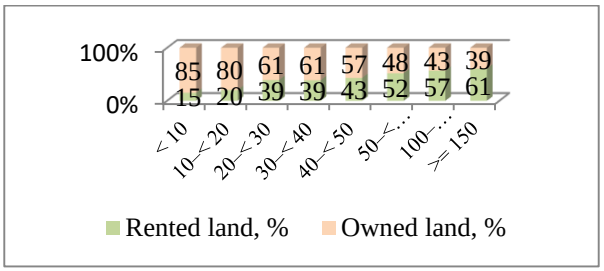

Fig. 3. Average level of ownership of agricultural land average in 2011–2015
Source: Own calculation on the basis of data from FADN data base 2011–2015.

The proportion of subsidies in total revenue varied across farms by their size. The relation of subsidies to farm total revenue amounted to as much as 8% in farms <10 ha, 17% in farms 10–<20 ha and 17% in farms >=150 ha, in others – more than 22%. A significant part of subsidies was in farms 30–<50 ha (=<30%).

Assessment of competitiveness

Assessment of competitiveness of the farms in Lithuania (Table 1) showed that farms' up to 20 ha and 30–<40 ha competitiveness index was below 1 in the period 2011–2015. It indicated the lack of development abilities; they had a partial remuneration of owned and external factors. The measurement confirmed the farms from 40 ha reached competitiveness level =>1, which means that farms has full remuneration of owned and external factors.

Table 1. The competitiveness index by farm size in 2011–2015

Period	< 10	10–< 20	20–< 30	30–< 40	40–< 50	50–< 100	100–< 150	>= 150
2011	0.68	0.87	1.32	0.93	0.90	1.34	1.27	1.49
2012	0.48	0.66	1.37	0.83	1.05	1.25	1.48	1.77
2013	0.40	0.97	0.97	0.58	1.02	1.12	1.03	1.15
2014	0.48	0.28	1.01	0.75	1.17	0.85	0.83	0.88
2015	0.83	0.52	1.07	0.69	0.77	1.13	1.07	1.12

Source: Own calculation on the basis of data from FADN data base 2011–2015.

As competitive farms can be considered farms in the group of 50 ha and larger (except in 2014), 20–<30 ha farms (except in 2013) and farms in group of 40–<50 ha in 2012–2014.

The analysis indicated the lack of competitiveness of the farms up to 40 ha, except these of 20–30 ha. The farms in the croup of 50–<100 ha, 100–<150 ha and =>150 ha failed to reach competitive level in 2014 because of lower total output, higher intermediate consumption and depreciation than the average over the period 2011–2015.

CONCLUSIONS

The average income per AWU gained by farms in the group of 150 ha and larger were up to 9 times higher than in farms size up to 50 ha. The share of own labour dropped along with a growth in size of farm. The cost of labour per UAA was highest in smallest (up to 20 ha) and largest farms (100 ha and larger).

The share of rented land showed an upward trend along with a size of farm. The cost of land rented varied across farms by their size, average in 2011–2015 in the smallest farms group (under 10 ha) and in the largest farms group (>=150 ha) was more than 20 % higher and in farms group by size 30–<40 ha 22 % lower than the average in all farms.

The value of assets per AWU correlated with the size of farm. Asset value in farms in the group of <=150 ha was highest – 4.9 times higher than in farms under 30 ha. The differences were not so varied among farms by size under 30 ha.

It was indicates the lack of development abilities for small farms in Lithuania. Competitiveness index of the farms' up to 20 ha and 30–<40 ha was below 1 over all the analysed period; they generated less FNVA per AWU, had the higher values for paid and unpaid labour than average in all farms and. In farms of 20–30 ha was generated a greater FNVA per AWU under almost the same labour, land and capital resources costs as in other up to 40 ha size farms, this confirmed them to be able to compete.

The measurement confirmed the farms from 40 ha have full remuneration of owned and external factors. As competitive farms (except some years when they failed to reach competitive level because of lower total output, higher total intermediate consumption and depreciation than the average over all period) can be considered farms in the group of 50 ha and larger, 20–<30 ha farms and farms in the group of 40–<50 ha in 2012–2014.

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