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EFFICIENCY OF THE USE OF ASSETS IN THE FARMS OF KURZEME PENINSULA IN LATVIA

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Abstract

The paper summarises the results of research on the efficiency of managing assets in farms of the Kurzeme peninsula in Latvia. The research presented the results on the asset structure. The calculations included several indicators, e.g. output values compared to the total asset value. To reflect the polarity of the results, data on groups of farms whose economic indicators differ sharply were used, namely those whose economic size is from 4 – 8 units of economic volume (UEV) for small farms and from 40 to 250 UEV for large farms. Based on the research results, it can be concluded that the group of small farms does not exhibit significant changes in the output volume over the analysed period, but the group of large farms shows development trends because both the output value and the total asset value have grown. In addition, the purchase price of products or current assets was evaluated, putting emphasis on the analysis of the prices of grains and milk.

The analysis of the prices of grains, which reflects the current assets of farms, including the opportunity for the asset increase, led to a conclusion that the prices are stable but the price in the industry rose in 2007. In its turn, the price of milk has fluctuated over the respective period.

The second component of the analysis – the value of assets – has significantly increased during the recent years. Such a divergence in processes explains a phenomenon shown in Table 1 that the output value estimated per LVL 1 of the total value of assets has not increased, but even substantially decreased during the recent years. In these enterprises and companies, the long-term investments (assets) have strongly grown, and the output value has also risen. At the end of the analysed period, the output of any large agricultural enterprise was 25 times that of any small farm. With a recession strengthening by the end of 2008 and in the beginning of 2009, the milk market shrank as the purchasing power of population significantly decreased and sales of cheese and other milk products tumbled. The low purchase prices of milk, to a great extent, are determined by the very fragmented milk processing industry in Latvia because many small milk processors spend a lot of funds for self-maintenance, which could be paid to milk suppliers. The total cost of intermediate consumption has more than doubled over the analysed 5 years, which could essentially impact profitability unless such a sharp increase in costs is synchronically followed by an increase in prices of key agricultural products or an increase in financial support from the government and the EU. In the group of medium farms, the increase rate sharply rose and the net incomes, in absolute terms, tripled during the first four years, but in the last year of the analysed period – sharply decreased again.

Keywords:

Assets, efficiency, agriculture, farm.

Introduction

The structure of long-term assets (investments), the composition of all assets and their total capacity change in farms and commercial agricultural enterprises in Latvia. These processes have several causes, and they might cause significant consequences.

The presently available researches on the structure and dynamics of assets have been fragmentary and episodic (Kalniņš, 2002, Sabulis, 2002, Ivans, 2008, Pilvere, 2008, Vehkamaki, Aro, Ylatalo, 2008, Buģina un Muktupāvela, 2008 a.o.).

It is assumed that agricultural efficiency is determined not only by various uncontrollable natural resources or factors, but also by the composition and structure of industries and other resources. Purposeful and scientifically motivated management of long-term investments, planning of current assets are of great importance.

Economic performance indicators of farm groups of various sizes are annually analysed by scientists of the Latvian State Agrarian Economics Institute (LSAEI) (Lauku saimniecību datu...., 2001 - 2008).

In her studies, researcher Pilvere I. (2008) has analysed agricultural land areas, support payments, changes in profit and turnover, and profitability, however, no detailed evaluation of return on assets was carried out.

Silina L. (2008) has researched the polarisation of assets, incomes, profits, and structure and the process of convergence on Kurzeme farms, however, no detailed evaluation of asset efficiency was carried out.

Unfortunately, the economic efficiency of agricultural output, in most cases, is low in Latvia. The value of assets, especially long-term investments, has increased substantially or sharply over the recent years. A low value-added reduces or even makes the competitiveness of Latvian agricultural goods impossible in markets of the Baltic or East European countries.

All these facts prove the urgency for the topic of studies included in this paper.

The research **object** is assets in agriculture.

The research **aim** is to evaluate the efficiency of managing assets in farms of the Kurzeme peninsula.

The following research **tasks** have been set forth to achieve the aim:

- to evaluate the efficiency of managing assets by output in the groups of small and large farms;
- to analyse the changes in purchase prices impacting the efficiency of assets;
- to evaluate the changes in resources used for intermediate consumption on farms;
- to analyse the impact of economies of scale on farm profits and net incomes.

The following research methods – analysis and synthesis, the inductive and deductive method, the graphical method, as well as the time-array method – were used in the research.

In the present research, data of the Central Statistical Bureau (CSB) of the Republic of Latvia and the LSAEI on groups of farms of various economic sizes were used, and scientific publications on findings in the field of asset management were analysed.

Asset capacity in the total value of output

The efficiency of managing assets might be evaluated by several indicators. One of them is the ratio of the output value to long-term assets or current assets, or to the total value of assets.

To analyse the capacity of the total value of assets, calculations were carried out for two antipodal groups of farms in the region – small farms (4 ≤ 8 UEV) and large (40 ≤ 250 UEV) agricultural enterprises (companies). To estimate the capacity, ratios of the output value to the total value of assets and to current assets were calculated. The estimates for small farms are given in Table 1.

Table 1. Efficiency of managing assets by output in small farms of Kurzeme region in 2001-2007

Year	Output value in real prices, LVL	Output value per LVL 1 of	
		total value of assets, LVL	current assets, LVL
2001	11421	0.57	1.53
2002	13900	0.45	1.84
2003	12755	0.67	1.62
2004	11151	0.50	1.55
2005	7668	0.36	1.26
2006	14361	0.47	1.57
2007	13961	0.38	1.44

Source: author's estimates according to SUDAT data

According to the data of Table 1, one has to conclude that the value of output in small farms has not significantly changed and was within the range of 11-14 thousand LVL over the analysed period, except for 2005 when the value of output was twice as small as in 2002 and 2006. Such a decrease could be impacted by yearly or seasonal weather conditions.

The second component of the analysis – the value of assets – has significantly increased during the recent years. Such a divergence in processes explains a phenomenon shown in Table 1 that the output value estimated per LVL 1 of the total value of assets has not increased, but even substantially decreased during the recent years.

However, the economic performance of small farms do not characterise economic possibilities because the managerial and professional level is not high there.

Entirely different results of economic performance, i.e. results of managing assets, are observed in large agricultural enterprises, which are shown in Table 2.

In these enterprises and companies, the long-term investments (assets) have strongly grown, and the output value has also risen. At the end of the analysed period, the output of any large agricultural enterprise was 25 times that of any small farm.

By estimating the output value per LVL 1 of the total value of assets, it was found that it is much higher in large agricultural enterprises than in the group of small farms.

Table 2. Efficiency of managing assets by output in large agricultural enterprises of Kurzeme region in 2001-2007

Year	Output value in real prices, LVL	Output value per LVL 1 of	
		total value of assets, LVL	current assets, LVL
2001	192565	0.67	1.64
2002	168620	1.04	1.77
2003	189147	0.89	1.45
2004	249248	0.76	1.60
2005	180469	0.36	1.08
2006	308930	0.62	1.55
2007	351737	0.67	1.84

Source: author's estimates according to SUDAT data

Purchase prices impacting the efficiency of managing assets

It is assumed that purchase prices of agricultural commodities, which are paid by food processing or trade enterprises to farmers, might have an especially significant impact. For the analysis, data on two major agricultural products – grain in the crop industry and milk in the livestock industry – were used.

Table 3. Dynamic relationships among purchase prices of grain, its total output, and purchased quantities in Latvia's NUTS-2 region in 1999-2007

Year	Wheat purchase price, LVL/t	Average purchase prices for all grains		Total output of grains		Grains sold to food processing enterprises	
		LVL/t	%	thsnd.t.	%	thsnd.t.	%
1999.	60.30	58.17	100.0	783	100.0	294	100.0
2000.	61.19	60.50	104.0	924	118.0	33	112.2
2001.	59.14	57.82	99.4	928	118.5	430	146.3
2002.	59.58	58.45	100.1	1029	131.4	434	147.6
2003.	63.10	61.56	105.8	932	119.0	370	125.8
2004.	67.91	65.27	112.2	1060	135.4	452	153.7
2005.	61.56	59.80	102.8	1314	167.8	535	182.0
2006.	77.83	73.33	126.1	1159	148.0	470	159.9
2007.	132.11	123.83	212.9	1535	196.0	693	235.7

Source: CSB data and the author's estimates

Several conclusions and explanations were made from the estimates included in Table 3:

- during the first 7 years of the analysed period, the wheat purchase prices were stable and slightly increased only in 2006, whereas sharp changes took place in 2007 – the prices doubled. It could be caused by changes in grain prices in the world market, bur also by the market situation in the EU and a smaller output of grains in 2006;
- in the first half of the analysed period, the purchase prises of all grains were stable, but during the recent five years the prices have increased, however, the prices were very volatile: in 2004 they increased by 12%, but in the next year the prices fell again to an average level of many years. A significant increase in the average prices of grains was in 2007;
- grain processing enterprises or their wholesale intermediate enterprises have purchased the same quantities of grains from producers over six years; a difference was observed in the years when larger quantities of grains were produced – small reserve quantities were purchased;
- there was a substantial increase in the quantity of grains purchased in 2005, but big changes took place in the last year of the analysed period;
- there is no explicit relationship between the purchased quantities of grains and their prices and the total output of grains, although the output has not significantly changed but gradually increased.

The estimates (see Table 4) of the dynamic relationships among purchase prices of milk, its total output, and purchased quantities are a basis for certain findings:

- the purchase price level for milk has fluctuated within a wide range in the analysed period: in the first half of the period, the prices rose quite evenly – up to 119%, but since 2004 after joining the European Union, the changes became more explicit and the prices increased by LVL 60-70 per ton during four years. However in 2008, the milk purchase prices dropped again in Latvia due to the impact of the world milk market;

Table 4. Dynamic relationships among purchase prices of milk, its total output, and purchased quantities in Latvia's NUTS-2 region in 1999-2007

Year	Milk purchase price		Milk output		Sold to milk processing enterprises	
	Ls/t	%	thsnd.t	%	thsnd.t	%
1999.	80.59	100.0	798.7	100.0	390	100.0
2000.	87.17	108.2	825.0	103.3	398	102.0
2001.	95.52	118.5	848.0	106.2	403	103.3
2002.	94.09	116.7	813.7	101.9	385	98.7
2003.	96.09	119.2	785.7	98.4	436	111.8
2004.	131.06	162.6	786.4	98.5	464	119.0
2005.	155.2	192.6	810.3	101.4	502	128.7
2006.	162.77	202.0	815.1	102.0	592	151.8
2007.	183.31	227.5	841.6	105.4	631	161.8

Source: author's estimates according to CSB data

- the purchase price level for milk fell very sharply in the second half of 2008: at the turn of 2007/2008, the price reached LVL 238 per ton, whereas by the end of 2008 it fell up to LVL 170 per ton;
- a substantial increase in the quantity of milk purchased for processing followed an increase in the purchase price of milk: already in 2006, 54% more milk was purchased than in 2002. Very extensive changes were observed also in the recent years;
- the extensive changes in the prices and quantities have not significantly impacted the output of milk. It can be explained by existence of the international milk market in the Baltic countries, but an increase in the quantity of milk purchased for its processing could occur due to a decrease in consumption of unprocessed milk.

With a recession strengthening by the end of 2008 and in the beginning of 2009, the milk market shrank as the purchasing power of population significantly decreased and sales of cheese and other milk products tumbled.

The low purchase prices of milk, to a great extent, are determined by the very fragmented milk processing industry in Latvia because many small milk processors spend a lot of funds for self-maintenance, which could be paid to milk suppliers.

As to the structural aspect, the small and fragmented processing industry hinders also development of agricultural specialisation and economies of scale as well as economic interests.

Further in the research, the attention was paid to wheat farms of various economic sizes in order to identify a relationship between purchase prices and economies of scale, assuming that a higher price is possible if selling larger quantities of products. Such an element as a possibility of higher quality for products from larger enterprises, where modern technologies and equipment is used, was included in the research conception. But higher quality ensures higher prices and larger incomes.

The purchase prices for wheat from farms of various economic sizes are shown in Table 5.

Table 5. Relation of wheat purchase prices to economies of scale in NUTS 3 Kurzeme region in 2007

Indicators	Groups of farms of economic sizes						
	2 ≤ 4	4 ≤ 8	8 ≤ 16	16≤ 40	40≤100	100≤250	>250
Wheat purchase price, LVL/t	94	80	134	118	117	137	140
%	100	85.1	142.5	125.5	124.5	145.7	148.9
Wheat yield per ha, tons	2.6	3.1	2.5	3.1	3.2	4.1	2.1
Wheat output value, LVL	224	187	2449	9772	32493	135396	45516
Wheat sold, tons (output value/ price)	2.4	2.3	18.3	82.8	277.7	988.3	325.1

Source: author's estimates according to SUDAT data

The Table 5 data and estimates show the very large role of economies of scale:

- for large farms, the wheat price is 1.5 times higher than for small farms and significantly higher than for medium farms;
- several factors determine a higher price for large wheat farms:
  - higher technological quality of grain achieved by producing grain of equal roughness;
  - transportation of grain is cheaper if a farm supplies large quantities etc..
- the output value of wheat in large farms (100≤250 UEV) is four times larger than in medium farms

(40 ≤100 UEV) and 55 times larger than in small farms (8 ≤16 UEV);
- the high output value of wheat in large farms is composed of not only a higher prise, but also a higher yield per every hectare of area sown;
- large farms still have a large potential for increasing yields.

Costs of resources in intermediate consumption

The estimates regarding the resources used in intermediate consumption and their changes are shown in Table 6.

According to the estimates shown in Table 6, the largest increase in costs was observed for fertilisers and health protection means (medicines, pesticides) for plants as well as livestock. Of course, these are energy intensive products as energy is used in their production.

Table 6. Costs for groups of resources used in intermediate consumption in Latvia's NUTS-2 region in 2003-2007

Indicators	2003	2004	2005	2006	2007
Energy (fuel, lubricants, electricity,) costs, mln. LVL	40.8	18.0	58.8	67.5	79.2
%	100.0	117.6	144.1	165.4	194.12
Fertiliser and plant and livestock protection costs, mln.LVL	32.0	39.0	55.4	55.2	79.0
%	100.0	121.9	173.1	172.5	246.88
Feed costs, mln.LVL	89.9	96.2	111.1	142.8	181,1
%	100.0	107.0	123.6	158.8	201.44
Other costs, mln.LVL	72.1	81.5	102.8	112.6	157.7
%	100.0	113.0	142.6	156.2	218.72
Intermediate consumption in total, mln.LVL	234.8	264.7	328.1	378.1	491.7
%	100.0	112.7	139.7	161.0	209.4

Source: Latvian Electro-technical Commission data and the author's estimates

The costs of fuel, lubricants, and electricity have risen at a very fast rate.

Over the recent years, feed costs also sharply increased. Such changes can be explained, first of all, by a large increase in energy prices.

The total cost of intermediate consumption has more than doubled over the analysed 5 years, which could essentially impact profitability unless such a sharp increase in costs is synchronically followed by an increase in prices of key agricultural products or an increase in financial support from the government and the EU.

A third possibility is not excluded as well – technological, logistical, and other processes are optimised to reduce the intermediate consumption of resources.

Changes in profit and income

Analytical estimates were done for small, medium, and large farms for a five year period and shown in Table 7.

Table 7. Profits in small, medium, and large farms in Kurzeme in 2003-2007

Year	Small farms (4≤8 UEV)		Medium farms (16≤40 UEV)		Large (100≤250 UEV) enterprises	
	LVL	%	LVL	%	LVL	%
2003	755	100.0	3172	100.0	35079	100.0
2004	1032	136.7	8623	271.8	60636	172.8
2005	1232	163.2	6309.	198.9	37311	106.4
2006	2169	287.3	17293	545.2	56292	160.4
2007	576	76.3	11682	368.3	108658	309.7

Source: SUDAT data and the author's estimates

According to Table 7, one can conclude that:
- in the group of small farms, increases in profit were observed from 2003 to 2007 when the highest average profit was reached; a very sharp decrease in profit was in 2007 – by 23.7% as compared to the base year and a fourfold decrease as compared to 2006;
- however, in large farms the year 2007 was successful and the profit was 3 times larger than in the base year and twofold larger than in the previous year – in 2006;
- in the group of medium farms, increases in profit are followed by a sharp decrease in it in 2007.

Table 8. Net income dependency on economic sizes of farms in Kurzeme in 2007

Indicators	Groups of farms of economic sizes						
	2 ≤ 4	4 ≤ 8	8 ≤ 16	16≤ 40	40≤100	100≤250	>250
Net income of farms, LVL	3647	6692	12017	21595	48277	127152	(45233)
Increase rate, %	-	183.5	79.6	79.7	123.6	163.4	x
Net turnover of farms, LVL	3740	8118	16442	39031	99068	379678	511735
Increase rate, %	-	117.0	102.5	137.4	153.8	283.2	34.8
Ratio of net turnover to net income, %	102.5	121.3	136.8	180.7	205.2	298.6	...

Source: SUDAT data and the author's estimates

After analysing a relationship between the net income and the net turnover, one has to conclude that the net incomes have steadily risen along with an increase in the net turnover of farms, respectively, the larger is the net turnover of a farm, the larger is the net income.

However, there are differences among the groups of farms in the ratios of the net turnover to the net income, but the positive trend does not change. The sharp decrease in the net incomes in the group of large farms causes doubts and is not used in this evaluation.

The analysis of the net incomes shows certain trends by groups of economic sizes. In the first four groups, the increase rate is flat, but for medium and large farms - it is much higher.

The increase rate of the net turnover is higher, except for the last group, the data credibility causes doubts.

Table 9. Net incomes in small, medium, and large farms of Kurzeme region in 2003-2007

Year	Small farms (4≤8 UEV)		Medium farms (16≤40 UEV)		Large (100≤250 UEV) enterprises	
	LVL	%	LVL	%	LVL	%
2003	3971	100.0	8165	100.0	42291	100.0
2004	4504	113.4	13766	168.6	80600	190.6
2005	6193	155.9	17468	213.9	62933	148.8
2006	8054	202.8	25719	315.0	78190	184.9
2007	6692	168.5	21595	264.5	127152	300.7

Source: SUDAT data and the author's estimates

Over the analysed period, the net incomes of small farms have progressively increased till 2006, while a decrease was observed in 2007.

In the group of medium farms, the increase rate sharply rose and the net incomes, in absolute terms, tripled during the first four years, but in the last year of the analysed period – sharply decreased again.

A different pattern and rate of changes was observed in large farms – the net income sharply increased in 2002 as well.

Conclusions

- The value of output in small farms has not significantly changed and fluctuated, but the output value estimated per LVL 1 of the total value of assets has not increased, but even substantially decreased during the recent years.
- In large enterprises and companies, the long-term investments (assets) have strongly grown, and the output value has also risen.
- It was proved in the research that the purchase prises of all grains were stable, but the prices have increased during the recent five years.
- There is no explicit relationship between the purchased quantities of grains and their prices and the total output of grains, although the output has not significantly changed but gradually increased.
- However, the extensive changes in the milk purchase prices and quantities have not significantly impacted the output of milk.
- In the structural aspect, the analysis shows that the small and fragmented processing industry hinders also the development of agricultural specialisation and economies of scale as well as economic interests.
- For large farms, the wheat price is 1.5 times higher than for small farms and significantly higher than for medium farms, but the high output value in large farms is also caused by higher grain yields.
- The total cost of intermediate consumption has more than doubled over the analysed 5 years, which could essentially impact profitability.
- The analysis of a relationship between the net income and the net turnover showed that the net incomes have steadily risen along with an increase

in the net turnover of farms, respectively, the larger is the net turnover of a farm, the larger is the net income.

- In the group of medium farms, the increase rate sharply rose and the net incomes, in absolute terms, tripled during the first four years, but in the last year of the analysed period – sharply decreased again.

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