

Analysis on key financial data of Hungarian dairy product manufacturing enterprises

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ABSTRACT

After several years of decline, dairy herd and milk production have started to rise from 2011. Considering the first growth phase, in current article we analysed the enterprises operating in the dairy product manufacturing sector in the period of 2012-2016. Among the principal financial indicators, we have chosen RoA and RoE to determine the general financial situation of the enterprises and analyse the changes in the five-year period. Based on the literature review we made our analysis by dimensions of enterprise size categories. Income statement and balance sheet needed for calculating financial indicators of enterprises have been downloaded from EMIS. Enterprises involved in our analysis belonging to small, medium and large size category and mean representative sample as this sample covers 30% of the total population. Share of sample enterprises from key performance indicators is similar to the total population so we can consider our sample representative also in this respect. Total assets value of enterprises analysed increased in the five years under consideration, however, this growth is mainly due to the increase of assets of large enterprises. The share of large companies from the total assets rose by 7% during the five years (from 64% to 71%), while the share of small and medium sized enterprises fell. Considering small enterprises, the total value of the domestic sales revenue in 2016 declined by 30% below the level of 2012. In the first two years analysed, a significant recovery of export revenues was noted, the total value export sales revenues almost doubled from 2012 to 2014. Domestic sales revenues of medium sized enterprises in 2016 show only a small percentage difference compared to 2012, but the trend of export sales is similar to small companies. The increase of domestic and export sales revenue of large companies is slight but continuous. Indicators of RoA and RoE show dynamic increase for large companies during the five years. Medium sized enterprises also experienced growth, however, in the last the years considered there was a fall. RoA calculated for small enterprises became positive, but its value is volatile, while RoE clearly show a continuing decrease.

1. Introduction

The economic importance of the agro-food sector in Hungary has been on a declining trend for several decades. In 2016, the contribution of agriculture and food industry to GDP is 3,9% and 1,9%, respectively (HCSO). Despite the share from GDP, agricultural food production is still the main element to create value from soil (Schaller et al. 2018), its role in the national economy is indisputable, to ensure healthy and safe feed and food and make contribution to the potential of rural areas are among the national strategic plans. However, Hungarian companies operating in agricultural

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production and food industry face a difficult economic environment. Several economic factors (inter alia the growth of input prices, high price pressure by retail chains, the slow pace of technological upgrades and restructuring, heavy tax and administrative burdens, lack of horizontal and vertical cooperation etc.) have adversely affected them (FM 2015). The output of Hungarian agriculture and food industry was ~9.3 and 10.3 billion EUR (in current prices) respectively, in 2016. This performance is far below the values registered in developed economies, where the production value of food industry is two or three times higher than the production value of agriculture (VOSZ 2012). Development of food industry is a strategic target in Hungary and for this aim analysing enterprises operating in agro-food industry and measuring their performance are important research fields. Current article presents a financial analysis of milk processing companies.

Milk production and processing is one of the main agro-food sectors in Hungary, and Hungarian milk sector plays an important role in the Central-European region. Among Member States which acceded the European Union as from 2004, Hungary has the second largest share (1.2%) from the total EU-27 milk production, after Poland (6%) (Tacken et al. 2009). In 2016, the number of enterprises operating in milk production and milk processing sector was 741 and 80, respectively. After a decrease, the dairy herd has increased from 2011 onwards and since the low point in 2010 (309.2 thousand of pieces), the dairy herd size was almost 395 thousand of pieces in 2017 (HCSO). As indicated by Vőneki et al. (2015), with the grow of dairy herd, concentration has also increased for Hungarian milk producers. The last few years have also seen a growth in milk production, from 1890 million litres production in 2015 to 1915 million litres in 2017 (HCSO).

Despite growth and opportunities, challenges are expected for milk processing companies, one of the main problems could be the environmental sustainability in the forthcoming period. (Chen & Holden 2018). In the paper of Moyes et al. (2014) technology, which can help the transition from the conventional to a new, innovative and sustainable production, is highlighted. One major drawback of the small business size category, however, that it is difficult to fulfil the new technological conditions for milk producing (Paura & Arhipova 2016). Research and development costs have a negative impact on the innovation performance in the case of small and medium sized enterprises operating in the Hungarian food supply chain (Török et al. 2018). Findings of Zhang et al. (2018) also point out sustainability challenges milk processing companies have to face with, and authors carried out a model for energy consumption. Competitiveness of milk processing companies may be increased through cost reduction enabled by environmentally sound technologies (Vőneki et al. 2015). Innovation and ICT are vital elements in the promotion of the competitiveness of milk producer and milk processing companies. Innovation with management techniques and ICT potentials makes supply chain suitable to react better for the increasingly sophisticated consumer demands (Dani 2015). The position of food processing small and medium sized companies, however, uncertain and vulnerable since they suffer severe economic and commercial disadvantages compared to large companies. Analysis of SMEs is thus considered important and several analyses have been published on their economic, financial, innovation and competitiveness. Some conclusions from these research papers are highlighted in the section below. Tacken et al. (2009) analysed the difference between size categories of milk processing enterprises and results showed a much higher realized return on assets in the case of large companies compared to smaller ones. The role of economies of scale is also important at processing level, mainly for mass-produced and thus less brandable products, where price is the main competitive factor (AKI 2016). Stup et al. (2006) analysed the performance of milk producing farms and ROA and ROE were dependent variables in their research. Calsamiglia et al. 2018 worked out a stochastic model that is a useful tool to assess and identify the results of short-term and long-term technological and economical decisions to ensure economic sustainability of milk producing sector. Pérez-Gómez et al. (2018) evaluated basic characteristics of 599 Spanish small and medium-sized enterprises in the food industry for effectiveness and concluded that the investigation of the resources and position of these enterprises has a key importance due to the significant role of the sector, in order to increase performance. Results of financial analyses of the Hungarian milk processing sector made by Rózsa and Tálas are significant. In their study (Rózsa & Tálas 2014) a competitive analysis is done by comparing financial statements of 7 enterprises. By extending their analysis (Rózsa & Tálas 2016) the business value creation was examined among leader milk processing companies.

2. Methodology

Databases used for the analysis

The role of Hungarian regions in milk processing is illustrated by map visualization. Dairy cow herd size and number of enterprises operating in milk processing sector were used from database of Hungarian Central Statistical Office (hereinafter HCSO). Concerning territorial dimension, former indicator was available on county-level (NUTS-3), latter on settlement level for 2016. Balance sheet and financial statement required for calculating main financial indicators of enterprises operating in milk processing sector were downloaded from EMIS database. Database established from EMIS was compared with statistical data available in HCSO for two dimensions (size category and region). The result showed that EMIS contained approximately 30% of the total number of milk processing enterprises registered in HCSO and the division of sample enterprises is similar by both of two dimensions to the population. In this way, sample can be considered representative.

Sample

Structured enterprise statistics is available in Eurostat database which enables to filter database by different economic dimensions for individual sectors. The chart below (Figure 1) shows the share of enterprises operating in milk processing sector to some indicators by size categories.

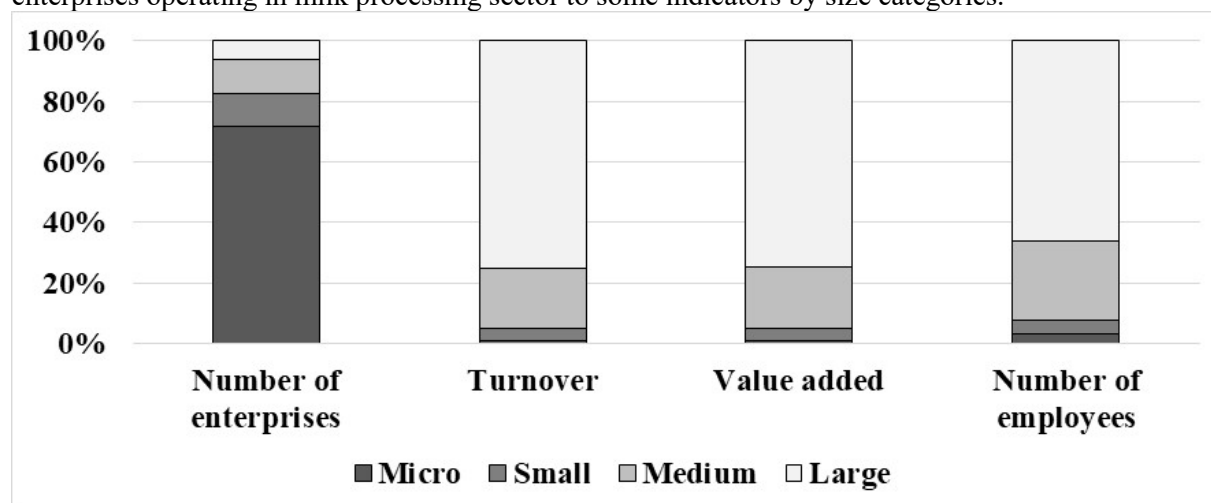


Figure 1. Share of key indicators of dairy manufacturing sector by enterprise size categories (Data source: Eurostat)

It is apparent from Figure 1 that almost two-third of the enterprises belongs to the micro size category, however, it plays a marginal role in the performance of the sector.

Because of the marginal role of micro enterprises in performance indicators and the low number of micro sized enterprises in EMIS database, this size category was not evaluated. The small and medium-sized and large companies were entered into our database, with representative number of enterprises.

Table 1. Summary table of key information on enterprises involved into analysis

Size-category	Number of companies	Number of employees	Share from total assets	Share from revenues
Small	17	282	5%	4%
Medium	12	1 384	24%	24%
Large	7	4 293	71%	72%
Total	36	5 962	100%	100%

Main data about the sample involved into the analysis can be seen in Table 1. Sample number by size categories and the contribution of groups to the performance indicators are similar to the population. According to the Eurostat database, 127 enterprises operated in milk processing sector in 2016, thus the sample (37 enterprises) covers 30% of the total population. Given that the growth began in 2012, current study focuses on the period of 2012-2016. Database contained the two required financial reports for enterprises analysed, for the term above.

Grouping and homogeneity

Standard Deviation calculated for values of RoA, RoE and export rate of enterprises involved into the analysis was reduced through classification by size in each year. Two enterprises were excluded from the data set because of their outlier indicator values. Groupings by size category dimension lowered the value of Standard Deviation thus increasing the homogeneity of sub-samples created and in this way the means calculated for the groups are more suitable to characterise the sub-samples. Breakdown by enterprise size was the basis of our study since recent years have seen an increasingly importance of functional analyses for assessing performance and making rural development or business development decisions.

Financial indicators calculated

Data used for calculating the main financial indicators:

- Net sales revenue
- Export sales revenue
- Profit after income tax
- Total assets
- Total equity

Domestic sales, export sales, total assets, ROA and ROE indicators were used for describing the general financial performance of milk processing enterprises and the results are presented by size categories. The indicators were calculated as follows:

- Return-on-Assets (hereinafter RoA) = profit after income tax / total assets
- Return-on-Equity (hereinafter RoE) = profit after income tax / total equity

Export rate = export sales revenue / net sales revenue

3. Results

General evaluation of milk processing companies was done by two aspects. The first part presents the location of milk processing enterprises and the share of cow herds by territorial dimension for the total population using HCSO database. The second part outlines the general financial data calculated from EMIS database by size dimension using some main financial indicators described above.

3.1 General information on Hungarian milk processing enterprises

To demonstrate the general situation of milk processing companies and determine regional differences we used map visualisation (Figure 2) for the year of 2016. Enterprises operating and cow

herd can be seen on the map. Former data was available on settlement level thus points show the location of the enterprises. The latter was county-level cumulative data and used for presenting the share of total herd.

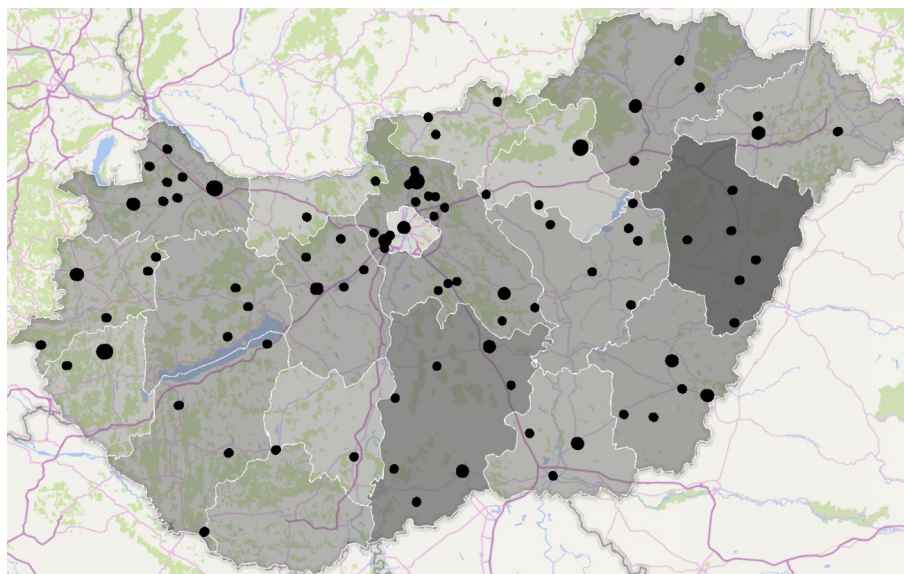


Figure 2. Location of the enterprises operating in the dairy manufacturing sector and the share of dairy herd by county (Data source: HCSO)

Black dots on the map indicate those settlements where at least one milk processing enterprise operates, the size of the dots refers to the number of organisations (two or three). Database of HCSO classifies 24 enterprises into Budapest by territorial dimension. Since it mainly means the head office of the companies, authors searched one-by-one the location of the processing unit of these companies and these settlements are marked on the map. The background colour of the county indicates the share of the total cow herd. It can be seen the largest herd belongs to Hajdú-Bihar county (~50 thousand head) and Bács-Kiskun county (~36 thousand head). Northern Great Plain, Southern Great Plain, Central Transdanubia and Western Transdanubia have the largest number of milk processing companies. Hajdú-Bihar county has the highest number of cows.

3.2 Overview on financial situation of Hungarian milk processing enterprises

First the tendency of domestic and export sales revenue was calculated from the financial statement of enterprises analysed. Table 2 summarizes the changes in the two indicators for years from 2012 to 2016, compared with 2012 base year.

For small enterprises, the domestic sales revenue was 17 percent higher in 2013 than in the base year, however, after 2013 it steadily decreased, and the value calculated for the last year under review is 30 percent lower than the base year level. There was a significant increase in exports in the first two year analysed; export sales revenues almost doubled from 2012 to 2014. It decreased in 2015 and 2016, however, did not fall below the level of 2012 as happened in the case of domestic sales.

Ratio calculated for domestic sales revenue of medium sized enterprises shows only a change of a few percent compared to 2012, nevertheless, tendency in export sales revenue was similar to small enterprises with lower rate of growth. A significant decline was observed in 2016 for export sales trend and did not even reach the level of 2012.

Table 2. The change of domestic and export sales revenues by enterprise size categories

	Domestic sales revenue (2012=100%)	Export sales revenue (2012=100%)
Small	2016 70% 2015 103% 2014 112% 2013 117% 2012 100%	2016 121% 2015 157% 2014 187% 2013 160% 2012 100%
Medium	2016 95% 2015 99% 2014 107% 2013 96% 2012 100%	2016 96% 2015 135% 2014 154% 2013 120% 2012 100%
Large	2016 131% 2015 127% 2014 127% 2013 105% 2012 100%	2016 126% 2015 118% 2014 113% 2013 107% 2012 100%

Large enterprises witnessed a smooth and steady annual increase in their domestic and export sales revenue. Further research should be undertaken to determine the causes and factors behind this tendency; however, efficiencies of scale and economies of scale may be a possible positive factor for predictable growth. Large companies have the potential supplying homogeneous products (sometimes under identical cost conditions) in large quantities. In this way, large companies have the opportunity to establish a long-term contractual relationship and become stable supplier, while small- and medium-sized enterprises the changes can be bigger. Economies of scale is affected by financial strength among others and total assets of enterprises under review was analysed by size classes. The result can be seen on Figure 3.

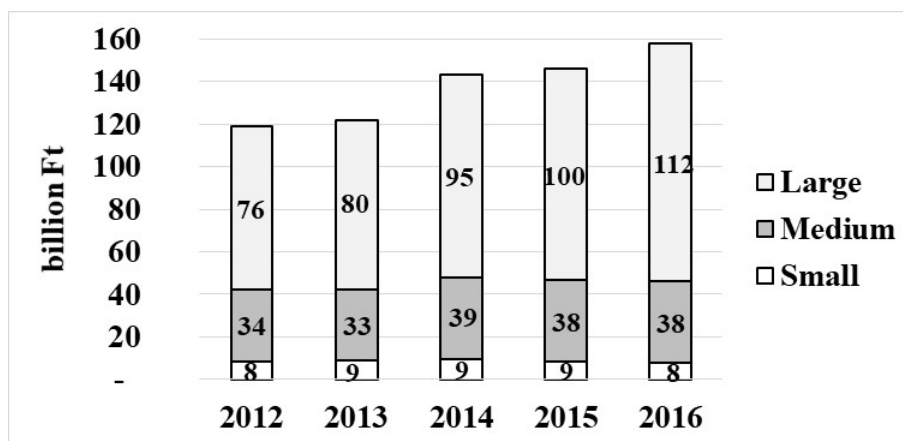
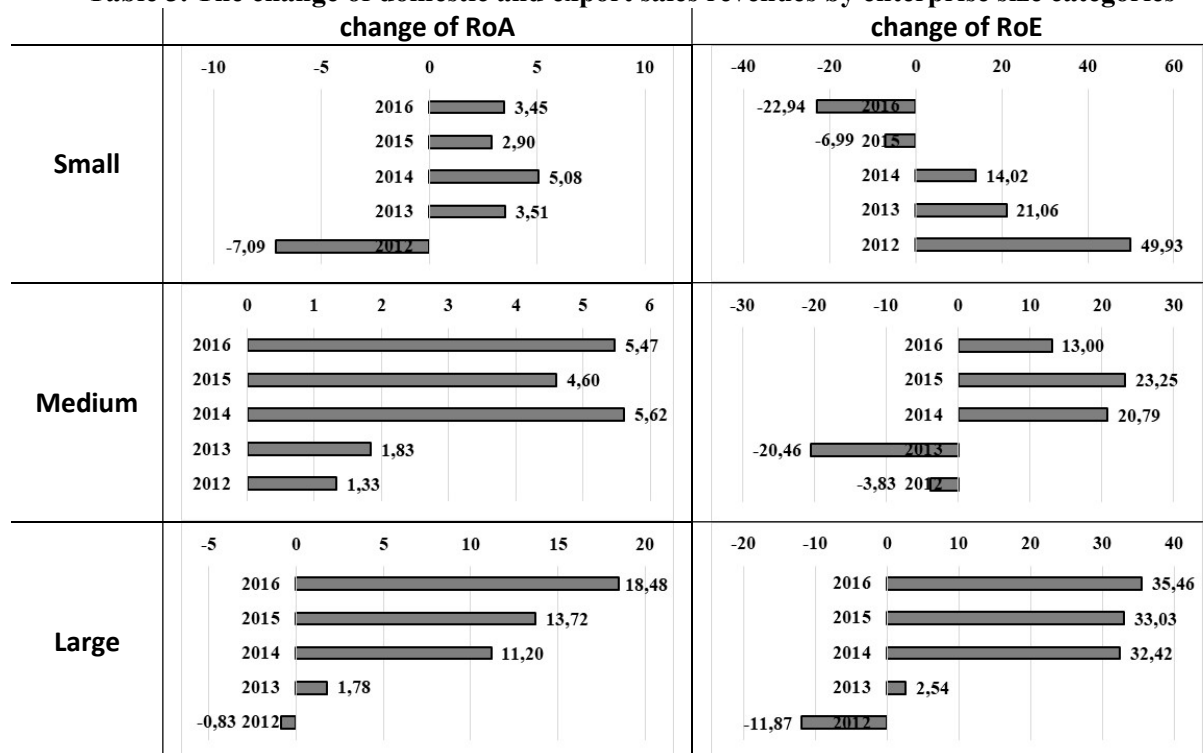


Figure 3. The change of total assets value of enterprises considered in the period of 2012-2016 by enterprise size categories

Total assets value of enterprises analysed increased in the 5 years of observations, but this growth resulted from an increase in total assets of large companies. The value of assets belonging to small- and medium sized enterprises did not substantially change. Regarding the share of assets, it means a growth of 7 percent (from 64 to 71 percent) for large companies and a decrease of 2 and 5 percent for

small- and medium-sized enterprises, respectively, from 2012 to 2016. Among main financial indicators, RoA and RoE were investigated to determine the general financial situation and the changes occurred in the period considered. Table 3 shows the change in the average of RoA and RoE by size categories.

Table 3. The change of domestic and export sales revenues by enterprise size categories



The trend of RoA and RoE indicators show dynamic growth in the case of large companies. Development achieved by 2016 was strong during the years analysed from negative values in 2012. Medium-sized enterprises also seen an increase in RoA and RoE, however, the trend was not smooth and in the two last years there was a slight decrease as well. The average value of RoA calculated for small enterprises developed positively after 2012, but its value fluctuated, while RoE shows clear trend for reduction. Latter is mainly resulted from the value of equity since besides the decreasing trend in its value, it was negative which indicates that it did not reach even the value of subscribed capital.

4. Conclusion

Current article is an overview on the general financial situation of enterprises operating in the dairy processing sector. Based on the financial reports (balance sheet and financial statement) basic financial indicators were calculated and their values were analysed for the period of 2012-2016. Result of analysis based on the breakdown by size classes shows that the rate of growth and decrease could be significant in a year. Growth rate of the large companies is slow; however, it is balanced and predictable. Besides the positive trend, almost three quarters of the total assets is owned by them. This tendency is affected positively by their financial stability and strength. Further examinations and data collection is required to determine a complex and comprehensive picture about the sector and the situation of the dairy processing sector among other food processing sectors. Furthermore, analysis of additional factors (such as ICT usage characteristics) affecting the performance and effectiveness of enterprises could also be useful identifying differences and supporting development of SMEs.

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