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Research Paper

CONCENTRATION AND CONSOLIDATION TRENDS IN ROMANIA'S DAIRY PRODUCTION AND PROCESSING SECTOR

Dairy Science

KEYWORDS : agro-food industry, structural change, consolidation, dairy processing, concentration ratio

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ABSTRACT

Dairy production holds an important position in Romania's agricultural economy. Roughly 725000 agricultural holdings provide 4075 million liters of milk annually, having a value of 1252.8 million euros, which represent 7.3 % of the overall agricultural production value. In the dairy processing activity approximately 11600 people are employed, generating a turnover of 0.9 billion euros.. During the last decade there has been a decrease in the number of dairy processing companies on the Romanian market and a consolidation and growth of the largest companies. This paper proposes to contribute to the understanding of the agri-food market concentration and restructuring process by examining the consolidation and structural change in the Romanian milk processing industry. The specific aspect of Romania's milk production sector is the strong fragmentation that takes place at the milk producers' level. The processors' segment is much more concentrated, so that in 2011, 8 economic operators gather 57% of the sector's turnover.

INTRODUCTION

Dairy production holds an important position in Romania's agricultural economy. Roughly 725000 farms provide 4075 million liters of milk annually, having a value of 1252.8 million euros, which represent 7.3 % of the overall agricultural production value. In the dairy processing activity approximately 11600 people are employed, generating a turnover of 0.9 billion euros. The number of multinational companies available on the Romanian market of milk production is not big compared to other industries; however, the market share they hold is significant.

The structure of dairy processing industry has undergone substantial changes in the last decades by privatization, liberalization and globalization (Swinnen & Maertens, 2007). It also had to adapt to a number of factors, including the growth of the investment by multinational companies, the technological change, the change in demand for dairy products and the consolidated retailing environment. During the last decade the total number of dairy processing companies in the Romanian market decreased with only a few large companies continuing to consolidate their position. A direct positive impact of this consolidation is on the output and productivity of the processing company and efficiency gains for consumers.

Several studies have been made recently about the evolution of the food processing investigating market competition and vertical coordination for milk processing industry (Hovhannisyan, 2011, Alvarez, 2000.) The mergers, as economic processes through which a dominant position is created or consolidated, are considered, however, to be able to distort the competitive environment and reduce competition (Hatirli, Ozkan, Jones, and Aktas (2006).

Structural changes and consolidation processes in the milk industry were considered to impact the milk producers, employees and rural communities (Ollinger, Nguyen, Blayney, Chambers, & Nelson, 2005). In a highly concentrated processing industry, with high demands in terms of the quality of raw materials, with an increasing number of private standards and post-production services, small producers find it difficult to integrate if the aspects concerning the equitable distribution of profits are not considered (Vorley, 2001). The increase of the consolidation degree, the achievement of economies of scale, has raised concerns in terms of the distribution of these effects along the chain (Hatirli et al., 2006).

The large number of holdings that exist at the primary production level and a certain consolidation trend recorded in terms of processing are the reasons for a more detailed analysis of the competitive environment on this market segment. This paper proposes to contribute to the understanding of the agrifood market concentration and restructuring process by examining the consolidation and structural change in the Romanian milk processing industry.

MATERIAL AND METHODS:

The choice of relevant methodology in this study is based on the following reasoning: the decrease of the number of companies in a sector and an increase in their size is, generally, associated with the increase in the concentration ratio. An analysis of the structural evolution within the dairy production industry in the last decade was conducted and the assessment of the concentration and consolidation trends was performed. In this sense, a series of indicators were used in order to constitute a basis for evaluation of the intensity of the concentration and consolidation trends on this market; hence, indicators which regards the structure and the size of the market, necessary for establishing the type of market to be analyzed (the coverage of the market, the value of the market, the number of operators on the market). Based on these, further on, a series of market concentration indicators were calculated, knowing the direct connection between the degrees of market concentration, the market structure and business performance of the market, the possible impact on the competitive environment.

DATA SOURCES USED In order to examine the chosen theme, there have been used statistical data concerning the supply (the structure of dairy producers, the livestock, the quantity of milk collected from farms) and demand (characteristics and structure of the processors: based on the annual industry accounts statistics for the years up to 2011 for the dairy processing industry, 1051 NACE series. The information was provided by The Chamber of Commerce and Industry of Romania, the Ministry of Public Finance, the Competition Council, the National Institute of Statistics, ANSVSA, MAPDR, EUROSTAT.

In order to address these research questions, the paper was structured as follows: Section 1 of this paper provides some statistic background on the Romanian milk subsector. The following section, Section 2, describes the theoretical framework of the concentration and consolidation concepts. Section 3 describes the results derived from the calculus of Concentration ratios for the dairy processing industry, expressed by the CR5, CR8, CR20, and CR25. Finally, Section 4 presents conclusions and suggestions for future research.

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RESULTS AND CONCLUSIONS

Section 1: Statistic background on the Romanian milk sub-sector. Milk represents the main animal product in Romania, contributing by 7.3% to the total agricultural production value achieved in 2011 (Table 1) and representing 2,4% of the milk production in EU 27. The milk production value, at basic prices, realized in Romania continues to decrease in the 2007-2011 period, as a share of output value achieved by the EU (Table 2).

Table 1: Milk production in the Agricultural output

Output components	2010 Mil Euro	2011		
		Mil Euro	% of total	% of EU
Milk	1 113.2	1 252.8	7.3	2.4
Agricultural goods output	13 902.7	17 103.3	100.0	4.8

Source: Eurostat, Economic Accounts for Agriculture

Table 2: Milk Production value at basic price (Millions of euro)

GEO/TIME	2007	2010	2011
EU 27	48.591	47.799	53.215
Romania	1.357	1.126	1.254
% of EU	2,8	2,4	2,4

Source: Eurostat

Dairy producers: characteristics, structure, trends. In Romania, the bovine producers are mostly individuals who own 1-2 bovines (dairy cows and heifers) and who use approximately 41% of the produced milk for their own consumption.

Table 3: Agricultural holdings with bovine herds and the bovine herds, on size classes, by legal status of the farms

	Size classes of bovine herds (heads)			
	1- 2	3 - 9	>10	TOTAL
AGRICULTURAL HOLDINGS WITH BOVINE HERDS -no				
Agricultural holdings without legal personality	535371	170999	18171	724541
Individual agricultural holdings	535066	169692	17378	722136
Agricultural holdings with legal personality	178	290	1048	1516
Companies with private capital	44	84	796	924
BOVINE NUMBER				
Agricultural holdings without legal personality	707772	706934	400700	1815406
Individual agricultural holdings	707300	699801	381038	1788139
Agricultural holdings with legal personality	281	1550	167940	169771
Companies with private capital	73	481	144787	145341

Source: General Agricultural Census 2010

The sector is characterized by a very small scale of production: The quality as well as the quantity of milk is, therefore, affected, the majority of total herds of dairy cows can be found in very small holdings of 1-2 heads, and only 2.7 percent of all dairy farms have 10 cows or more. The number of dairy cows has decreased starting with the 1990s, in the 2001-2011 period, this decrease reached 29% (table 4).

Table 4: Number of dairy cows, 1 000

geo\time	UM	2001	2007	2011
EU-27	100	26929	24061	22863
Romania	100	1620	1573	1154
% of EU		6,01	6,54	5,05

Source: Eurostat

The increase in productivity does not manage to compensate the decrease of herds, milk cows production at farms reduces by 23% in the analyzed interval (table 5). A major feature of the current Romanian dairy sector is the low utilization of total milk production by processing enterprises, with only 22, 5 % of estimated milk production being delivered for processing.

Table 5: Milk cows production at farm, mil. liters

GEO/TIME	2007	2009	2011
EU- 27	146.964,7	147.574,2	151.221,3
Romania	4.997,0	4.654,0	4.075,0
% in EU	3,4	3,2	2,7
Collection of cow's milk	1136,4	991,6	897,4

Source of Data: Eurostat, own calculation

Section 2: Theoretical framework

One common way to measure the market concentration is the concentration ratio (CR), which measures the share of the market controlled by the largest firms (typically the top 3, 4 or 5). The concentration level is determined by the number of companies and their relevant sizes. A market is more concentrated when the number of companies from the field is lower or when the distribution of market segments between the respective companies is more uneven. The measuring methods of the sectorial concentration come to complete the classical economic theory, contributing to the determination of the competition type. As the market travels from perfect competition to monopoly, the degree of sectorial concentration increases. As the degree of concentration increases, the market power of companies, seen as the ability to influence price, will increase as well. Usually, the rate of return increases when the market power of the company is higher.

If on a market $N(i=(1,N)^{-})$ activates, companies ranked in descending order of size, from the biggest to the smallest, according to the volume of sales qi, the total volume of sales on the whole market is Q.

$$Q \quad \sum_{i=1}^{N} q_i;$$

and the company's market i, noted with si, is determined as follows: si=qi/Q;

If all the companies have the same size, their market segments will be equal. si=1/N.

Usually, there is an inverse relationship between the number of companies and the size of the relative parts owned by these on the market. The concentration ratio for the biggest n is:

CRn= S1+ S2+.....+Sn, where Si is the market share of every company.

The concentration within the dairy processing activity sector is analyzed starting from the share of the first 5,8, 20, respectively 25 companies at national level, listed according to the turnover and the number of employees (CR4, CR8, CR20 and CR25).

Section 4: Data used and results

The industrial system of dairy processing in Romania is characterized by a poor use of milk production, less than ¼ of it being delivered to industrial processing, the rest being found in the traditional commerce. During the last decade there has been a decrease in the number of dairy processing companies on the Romanian market, but a consolidation and growth of the largest companies. Therefore, the number of economic operators who hold CAEN code 1051 „production of dairy and cheese" decreases between 2000 and 2011 by almost 50%, the total turnover of the sector increases in the same period by almost 85% and the average number of the sector's employees reduces by almost 22% (table 6).

Table 6: Manufacture of dairy products

GEO/TIME	2000	2007	2011*
Number of dairy enterprises	831	671	415
Turnover (Mio Euro)	447,3	943,3	831
Number of persons employed	20226	17478	11621
Total No of food enterprises	10.073	9.993	...

Source of Data: Eurostat, *) NSI

The decrease of the companies 'number in a sector and the increase of their sizes, either if it is due to technological factors, the supply impact or the concentration of retail networks, is usually associated with the increase of concentration ratio (Ollinger et al., 2005). The sector is characterized by a relatively high level of four firms and twenty firm concentration ratios, compared to these indicators' level in terms of food industry (table 7).

Table 7: Concentration of food products enterprises in 2010

Activity	No. of enterprises	% of total turnover		% of total employees	
		Top 5	Top 20	Top 5	Top 20
food industry	7861	4,8	18,0	5,7	13,2

Source: Statistical Directory 2011

The five-firm concentration ratio, CR5 (the combined market share of the top five firms), for the Romanian dairy-processing sector increased about 7% over the 2010-2011 periods to a level of 45%, which, according to the classic theory, shows the monopolistic character of this market. (table 8).

Table 8: Concentration ratios (turnover) for the Romanian dairy-processing sector 2010-2011

Year	Number of enterprises	Turnover (mil lei)	Cumulated in % of total turnover			
			Top 5	Top 8	Top 20	Top 25
2010	423	3347	41.7	52.2	67.3	70.9
2011	415	3658	44.9	56.9	72.4	75.9
% 2011/ 2010	- 1.9	8.5	7.1	8.1	7.1	6.6

The Top 25 processors have consolidated their position and in relation to the competition, the market share owned by them of the total dairy market is of 75.96% of the overall for 2011, up by 6,6% as opposed to the previous year (Table 8). The results show that restructuring and consolidation operations in milk processing industry is taking place, being complemented by an increase in industry concentration. As measured by CR there is a high concentration on the buyer side.

CONCLUSIONS

The specific aspect of the dairy production and industrialization sector in Romania is the strong fragmentation that exists in terms of milk producers. The fragmentation phenomenon puts the milk producers on a weak and vulnerable negotiation position, the asymmetry in the negotiation power being stressed also by the production quota systems, that limit the number of the potential buyers from those operators (processors, independent collectors etc.) approved by the competent authority. On the other hand, the processors' segment is much more concentrated, so that in 2011, 8 economic operators gather 57% of the sector's turnover.

For a sustainable development of the dairy chain in Romania, measures that take into account the advantages for consumers, as well as permitting the development and the access for small and medium sized processing enterprises, and also for the small dairy producers, are necessary.

Alternative marketing methods are necessary to be explored in this sense, especially in the context of the demands of some consumers' categories for local and regional products, and traditional processing technologies.

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