

ASSESSMENT OF PROFITABILITY OF DAIRY SECTOR IN ALBANIA

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Abstract

In the process of approximation to the European Union (EU), Albania seeks potential to increase competitiveness and food standards to improve import / export relation with agriculture and food products. Among the traditionally produced agricultural goods livestock rearing and particularly milk production activities have a long tradition in Albania due to the favourable natural resources for large and small ruminants. Due to the significance of livestock and milk production, particularly in rural areas, MoAF has selected the milk sector as a policy priority. The Albanian government and MoAF are inclined to support primary production and the dairy industry. Evaluation of performance at farm level is not possible because are missing the data. Official data (statistical yearbook of MAFCP) don't include information at farm level for each product. Farm-level dairy production in Albania is characterized by small-scale, peasant farming system based on extensive cattle grazing with little additional input. Given the current structure of the sector, milk production and processing is a domestically profitable activity, so that potential export opportunities could be sought.

Keywords: profitability, dairy sector, livestock

1. INTRODUCTION

Albania is part of the Mediterranean climatic zone characterized by a short humid winter and a hot and dry summer. Albania's topography displays great variability. Altitudes range from sea level along the Adriatic to 2,751 metres at Korabi Mountain in the Northeast of the country. A large part of the total area is hilly and mountainous. Most arable areas are in the coastal plains in the West part of the country. Although other sectors like “construction” became very important during the last years, agriculture contributes currently still more than 18 % to gross domestic product (GDP) and plays a very important role for the rural livelihoods.

Despite the importance of agriculture for the national economy, Albania is a net importer of agricultural products. According to the statistics of Albanian Ministry of Agriculture and Food Safety and Consumer Protection (MAFCP) the value of total food imports amounted to 73,087 million Lek and whereas total food exports were worth only 7,399 million Lek in 2008 (import / export relation 10:1)[1].

However, in the process of approximation to the European Union (EU), Albania seeks potential to increase competitiveness and food standards to improve import / export relation with agriculture and food products.

With regard to livestock Albania has a net deficit of meat and milk: in 2008 it imported 17,505 Mio tons (MT) of red meat, 19,295 MT of poultry meat and 16,673 MT of milk and dairy products. Import of milk and milk products amounts to more than 1.8 billion Lek in 2008. [2,3]

Among the traditionally produced agricultural goods livestock rearing and particularly milk production activities have a long tradition in Albania due to the favourable natural resources for large and small ruminants. According to the statistics of MAFCP the total milk production has increased from 948,000 tones in 2000 up to 1,040,000 tones in 2008 from which cow milk production was 86 % in 2008¹. In addition to the home production about 7-10 % of milk and milk products consumed (calculated as raw milk equivalent) during last years had been imported.[5,6]

1. Overview of the sector

1.1 Sector definition: sector components and importance

Generally, livestock production is seen as a backbone of Albania's agriculture. The value of livestock production was 87727 million leke (the official exchange rate in July 07 was 1€=140leke. Albania applies a floating exchange rate regime, and the currency has been relatively stable over the past year) in 2007, which is 57 per cent of the total value of agricultural production (Statistical Yearbook 2009). [7] Livestock products constitute a main source of food, and a high share of production still serves subsistence purposes. More specifically, *dairy* activities have a long tradition in Albania due to the favorable natural resource base for dairy production. In the plains, cattle production is dominant, while in the hills and mountains, sheep and goat production are more suitable. Traditional handcrafted products include yoghurt, butter, curd and different kinds of cheese from cow, sheep and goat milk.

The dairy processing industry, along with it the milk collection system, are still in the course of modernizing structures and technologies. In the late 1950s, the first milk processing plants were established in different regions of the country. While most small processing units use traditional craftsmanship technologies until today, a number of modern processing plants

are operating successfully, although these are struggling with the competition from informal markets. Nevertheless, consumers are discovering their preference for processed products such as pasteurized or condensed milk, fruit yoghurt and ice cream – mainly for quality and food safety reasons.

Due to the significance of livestock and milk production, particularly in rural areas, MoAF has selected the milk sector as a policy priority. The Albanian government and MoAF are inclined to support primary production and the dairy industry. One of the stated objectives is to improve the competitiveness of products in order to substitute for import and increase export potential.[8]

The system of value added tax (VAT) is a major problem for the processing industry. A 20 percent tax is charged on all products. Since farmers are excluded from VAT payments, the tax is levied on processed products only. This increases the retail price and aggravates competition of processed products compared to the informal market.

Table 1 below illustrate the small-scale structure and the subsistence orientation of dairy farms in Albania. In average are kept 2.4 heads of cattle/farm (only regarding farms that keep cattle at all), which includes calves, heifers and bulls. Thus, the number of milking cows is even smaller (1.58 per farm in average).

Table 1: Structure of milk production in 2008

Description	cattle	sheep	goat
Farms with cattle, sheep or goat (no.)	226,442	55,942	26,175
Animals (heads)	541,000	1,800,000	820,000
Milk production per year (tons)	895,000	77,000	68,000
Average number of animals (heads/farm)	2.4	32.1	31.3
Milking animals (heads)	360,000	1,321,000	610,000
Average number of milking animals (heads/milk producing farm)	1.58	23.6	23.3
Milk yield per cow (litres/head/year)	2,486	58.3	111.5

Source: MAFCP Statistics Yearbook of Albania for 2008 and authors' calculation

The average milk yield per cow/year in Albania is with approx. 2,500 Litres currently very low in comparison with the average of the EU-27 which is more than 6,000 Litres per cow/year.

Also sheep and goat milk production is organised mostly as capital extensive – labour intensive production system and milk yield per

ewe with about 58 Litres/year and per doe with about 112 litres are also very low.

The low capital intensity of production is resulting in low productivity, relatively high production costs and low profitability which in turn prevent the accumulation of capital to finance investment, thus perpetuating the low production and productivity levels on many dairy farms.

The developing milk production sector makes a considerable demand on feed and fodder supplies and its quality. Possibilities for expansion of natural pasture are limited, so increased feed must come from improved production of fodder such as alfalfa, maize and other grasses as well as improved utilization of industrial compound feed. For SR improvements of pasture management is one important aspect to increase productivity.

2. Performance of the dairy Farms

Evaluation of performance at farm level is not possible because are missing the data. Official data (statistical yearbook of MAFCP) don't include information at farm level for each product. Is not possible to calculate the profitability for milk product because we don't have data about: yield and prices for each product at farm level. Also are missing the data about **costs** (variables and fix costs). If we need to calculate the costs, we can't get any data about inputs (quantity and price) that are used per each product.

The subsequent analysis of the farm level and processing stages of milk production is based on **primary survey data**. The follow we are presented some figures and data analysis from this report.

Base run; productivity, cost structure, and profitability

Table 2 shows the key assumptions concerning a typical milk producer in a nationwide view. The assumptions were derived from a statistical analysis of the survey data and somewhat reflect a median farm in the overall sample, consisting of 40 farms in the region of Korce, Kucove, Lushnje, Permet and Tirane. Only specialized dairy farms were considered. To summaries the most important figures, the typical farm keeps four milking cows with an

average milk yield of 2,900 kg/year, receives a milk price of 35 leke, sells two pieces of cattle per year, and has available 1.5 ha of land for grazing and fodder production.

Table 2: Key data on typical dairy farm (base run)

<i>Major outputs and prices</i>		
No of milking cows	heads	4
Milk produced per cow	kg/year	2900
Milk price	leke/kg	35
	€/kg	0.25
Cattle sold	heads	2
Cattle price	leke/head	50,000
	€/head	357
<i>Major inputs and prices</i>		
Land	ha	1.5
Labour	hour/year	3,900
Wage (opportunity costs of labour)	leke/hour	70
	€/hour	0.50

Note: Assumed exchange rate: 1 € = 140 leke

Source: Survey data, author's calculations.

As will be seen below, the opportunity cost of family labor is of crucial importance for an assessment of the production costs. Based on reported wages for farm workers and expert consultations, it is for the moment assumed to be at 70 leke/hour (which equals 0.50 € per hour). This is slightly above the mean wage paid for hired laborers.

Cost structure and profitability of the typical dairy farm are presented in Table 3. The figures are given on a per cow and per kg basis. The revenue consists of milk and beef sales in a ratio of four to one.

The most important costs component in family labour. Its cost is almost six times the cost of the second most important item, which is farm grown fodder. 'Buildings & machinery' include depreciation and maintenance, 'animal health & services' include veterinary costs, vaccinations, medication, water, electricity and materials. Note that owned farm land and capital are assumed to have zero opportunity costs. This is justified by the fact that the typical farm solely works on owned land, land purchases are rare events, and alternative capital investment opportunities (even such as saving accounts) are often not accessible for farmers.

Given these assumptions, the typical dairy farm operates profitably, generating an annual profit of 34,200 leke or 244 € per cow, which is equal to 12 leke or 0.08€ per kg milk.

Table 3: Cost structure and profitability of milk production (base run)

	leke/cow	€/cow	leke/kg	€/kg
Revenue				
Milk	101,500	725	35.00	0.25
Beef	25,000	179	8.62	0.06
Total revenue [A]	126,500	904	43.62	0.31
Costs				
Farm grown fodder	12,475	89	4.30	0.03
Concentrate	4,600	33	1.59	0.01
Animal health & services	2,325	17	0.80	0.01
Buildings & machinery	4,688	33	1.62	0.01
Labor	68,250	488	23.53	0.17
Total costs [B]	92,338	660	31.84	0.23
Profit [A]-[B]	34,163	244	11.78	0.08

Source: Survey data, authors' calculations.

Table 4. Cost structure and profitability of milk production (scenarios 1&2)

Scenario I	leke/cow			€/cow	
	base run	wage=0	+10% milk	wage=0	+10% milk
Revenue					
Milk	101,500	101,500	111,650	725.00	797.50
Beef	25,000	25,000	25,000	178.57	178.57
Total revenue [A]	126,500	126,500	136,650	903.57	976.07
Costs					
Farm grown fodder	12,475	12,475	12,475	89.11	89.11
Concentrate	4,600	4,600	4,600	32.86	32.86
Animal health & services	2,325	2,325	2,325	16.61	16.61
Buildings & machinery	4,688	4,688	4,688	33.48	33.48
Labor	68,250	0	68,250	0.00	487.50
Total costs [B]	92,338	24,088	92,338	172.05	659.55
Profit [A]-[B]	34,163	102,413	44,313	731.52	316.52
Scenario II	leke/kg			€/kg	
	base run	wage=0	+10% milk	wage=0	+10% milk
Revenue					
Milk	35.00	35.00	35.00	0.25	0.25
Beef	8.62	8.62	7.84	0.06	0.06
Total revenue [A]	43.62	43.62	42.84	0.31	0.31
Costs					
Farm grown fodder	4.30	4.30	3.91	0.03	0.03
Concentrate	1.59	1.59	1.44	0.01	0.01
Animal health & services	0.80	0.80	0.73	0.01	0.01
Buildings & machinery	1.62	1.62	1.47	0.01	0.01
Labor	23.53	0.00	21.39	0.00	0.21
Total costs [B]	31.84	8.31	28.95	0.06	0.21
Profit [A]-[B]	11.78	35.31	13.89	0.25	0.10

Scenario calculations

To check the robustness of the result for the typical farm four scenarios were calculated:

1. Zero opportunity cost for family labor (wage=0).
2. Milk productivity increase by ten per cent at constant costs (+10 per cent milk).
3. Typical dairy farm for the region of Tirane.
4. Typical dairy farm for the region of Lushnje.

In the first two scenarios, single assumptions of the base run were modified. In the first scenario, the opportunity cost for family labor was set to zero, whereas all other assumptions remained in place. Similarly, in the second scenario, only the milk productivity was changed.

The first two scenarios were motivated by the following considerations. First, since it is often unobserved, the opportunity cost of family labor is particularly difficult to assess

It is crucially dependent on the availability of alternative employment opportunities for the farm population. Substantive off-farm employment may be a real alternative in regions close to urban centers, such as Tirane. However, in remote rural areas, these opportunities may often be not available at all, so that the opportunity cost goes to zero. Second, due to the increasing spread of high-yielding breeding cattle as outlined earlier or improving management skills of peasant farmers, productivity increases may be possible through technical progress by almost zero additional cost.

The results of the first two scenarios are given in Table 4. As was to be expected, profitability in both scenarios increased. In the zero wage scenarios, profit per cow almost tripled compared with the base run, whereas it increased by about 30 per cent in the productivity increase scenario. For example, in the zero wage scenarios, two cows approximately yield the Albanian gross domestic product per capita. The revenue and the cost structure per kg milk seems even to be broadly competitive with West European production system.

The third and fourth scenario aim to depict the situation given in certain regions more accurately. The broadest database was available for the regions of Tirana and Lushnje. In the both regions is dairy farming of major importance. In contrast in to the first two scenarios more of the assumptions is the base run were now changed. The key data is shown in the following table.

The table illustrates that, compared with the base run, farms in Tirana keep less and farms in Lushnje more cows. This goes hand in hand with smaller farms sizes as such. However, productivity figures in Lushnje are hit lower than in the base run. There is also a price gap for milk: milk prices in Tirana are higher and in Lushnje are lower than average. According to farmers' statements, cattle sales are less frequent in Tirana than in Lushnje. Since Lushnje city is a regional urban centre, opportunity costs are assumed to be the same in Tirane.

As indicated above Table, reveals considerable differences in dairy profitability as a result of these regional adjustments of the data, both on per cow and per kg basis. Lower milk prices and productivity in Lushnje lead to much lower milk revenue per cow, which are only partially compensated by higher beef sales. However, the labor intensity per cow is much higher in Tirane, so that labor costs are substantially higher at given opportunity costs. High labor costs in Tirane completely eat up the revenue advantage in this region, so that overall profitability per cow is only at about 2,700 leke or 19 € per cow.

To the contrary, the much more favorable relation between labor input and dairy output in Lushnje results in a profit figure that is much higher than in the base run, at about 57.500 leke or 410€ per cow. The results per kg milk are varying accordingly.

Therefore, the conclusion holds that dairy production in Albania can be done profitably at the farm level, although there appear to be substantial differences between regions. Larger herd sizes and lower labor intensity currently imply a comparative advantage for the Lushnje regions compared with Tirane region.

Table 5. Typical dairy farms Tirana and Lushnje

		base run	Tirane	Lushnje
Major outputs and prices				
No of milking cows	heads	4	2	7
Milk produced per cow	kg/year	2,900	2,900	2,700
Milk price	leke/kg	35	50	25
	€/kg	0.25	0.36	0.18
Cattle sold	heads	2	0.5	5
Cattle price	leke/head	50,000	50,000	50,000
	€/head	357	357	357
Major inputs and prices				
Land	ha	1.5	0.5	1.5
Labour	hours/year	3,900	4000	3200
Wage (opportunity costs of labour)	leke/hour	70	70	70
	€/leke	0.5	0.5	0.5

Table 6 . Cost structure and profitability of milk production (scenarios 3&4)

	leke/cow			€/cow	
Scenario III	base run	Tirane	Lushnje	Tirane	Lushnje
Revenue					
Milk	101,500	145,000	67,500	1036	482
Beef	25,000	12,500	35,714	89	255
Total revenue [A]	126,500	157,500	103,214	1125	737
Costs					
Farm grown fodder	12,475	6,045	7,129	43	51
Concentrate	4,600	3,450	2,629	25	19
Animal health & services	2,325	3,100	1,321	22	9
Buildings & machinery	4,688	2,250	2,679	16	19
Labour	68,250	140,000	32,000	1000	229
Total costs [B]	92,338	154,845	45,757	1106	327
Profit [A]-[B]	34,163	2,655	57,457	19	410
	leke/kg			€/kg	
Scenario IV	base run	Tirane	Lushnje	Tirane	Lushnje
Revenue					
Milk	35.00	50.00	25.00	0.36	0.18
Beef	8.62	4.31	13.23	0.03	0.09
Total revenue [A]	43.62	54.31	38.23	0.39	0.27
Costs					
Farm grown fodder	4.30	2.08	2.64	0.01	0.02
Concentrate	1.59	1.19	0.97	0.01	0.01
Animal health & services	0.80	1.07	0.49	0.01	0.00
Buildings & machinery	1.62	0.78	0.99	0.01	0.01
Labour	23.53	48.28	11.85	0.34	0.08
Total costs [B]	31.84	53.39	16.95	0.38	0.12
Profit [A]-[B]	11.78	0.92	21.28	0.01	0.15

2. CONCLUSIONS AND RECOMMENDATION

Results of preceding analysis can be summarized as follows:

- Farm-level dairy production in Albania is characterized by small-scale, peasant farming

system based on extensive cattle grazing with little additional input. Only 12 per cent the raw cow milk reaches the processing level, which itself consists of a range of processing units from many small, seasonally operating traditional cheese plants to few modern dairy plants.

- Albania currently is a net importer of milk. 93 per cent of consumer demand is met by domestic products and 7 per cent by imports.

-Only about half of the domestic raw milk production is sold on the market at all, and direct sales to consumers play a major role. Quality aspects are frequently ignored in milk marketing, and there is currently no strict health or quality legislation in force. However, consumers show an increasing consciousness of health-related issues. Whereas commercial dairy plants employ internal quality control systems, they face the drawback of high milk collection costs and the levying of VAT on their produce.

-However, in an overall assessment of the entire production chain which does not take into account the distribution of revenue among the different production stages, dairy production in Albania domestically profitable. This means that revenues achieved from the domestic sales of processed milk products are sufficient to cover all costs accruing throughout the entire production chain.

Albania is currently not exporting any dairy products at all, to make any ultimate statement on the international competitiveness of the dairy sector therefore seems to be premature. Given the current structure of the sector, milk production and processing is a domestically profitable activity, so that potential export opportunities could be sought. Based on impediments currently hamper the further development of the sector toward internationally competitive standards:

-Small farm and herd sizes limit the profitability of milk production and hence the efficiency of dairy farming, although regions differ in their comparative advantage with regard to dairy farming.

-Fragmented and dispersed production units increase the costs of milk collection.

-Processing in dairy plants is currently not profitable and full capacity of plants is not utilized. Also the profitability of the entire milk chain seems to be not sufficient to attract further investment. Reasons for this might be

the high share of informally traded milk production system.

-A high share of informal milk trade creates disincentives for any potential investors interested in the food industry. Without such investment no high-value marketing channels for farm products will emerge and commercialization of agriculture will be inhibited. This in turn will hamper the adoption of specialized breeding material and more intensive milk production systems.

- Commercial processors are systematically disadvantaged by the VAT system currently in place, which excludes peasant farmers from VAT payments. There is no level playing field on the national market for milk products.

- International quality standards are by far not met. This is partially due to the high share of informally traded milk and the importance of direct sales to consumers.

A lot of policy recommendations were made:

In the medium run, harmonization of quality and health standards with EU legislation should be further pursued. This is a prerequisite for any export of milk products, but would also make the domestic market more transparent and more reliable for raw milk producers. Requiring certain standards of production at the farm level would also stimulate the establishment of larger, more efficient and profitable farm structures, which in turn lower milk collection costs. Specifically targeted financial support and training programmes might however be necessary to enforce these standards.

The tax system should not discriminate against commercially processed milk products. Current taxation inequitably favors farm level milk production. Although milk production is domestically profitable, there is evidence that farmers' share in the overall value added is too large compared with the processing industry.

It is therefore required to develop a medium-term strategy which enables the domestic processing industry to establish a solid standing in market. For a transition period, this will necessitate to cut back currently existing advantages for informally trading farmers. At the same time, the government should ensure

that farmers have access to sufficient knowledge and resources to react to these commercialization processes.

We have stressed in several places the relevance of the opportunity costs of labour. The higher these costs, the lower the profitability and competitiveness of the Albanian dairy sector. This raises an important question concerning the future development of the Albanian economy. To the extent that non-agricultural industries develop in the country, these may induce an increasing demand for labour. In the course of structural transformation of the economy, the opportunity costs of farm labour may therefore increase, at least in certain urban centers. On the other hand, they may remain quite low in more remote areas. These inter-sectorial developments have a significant impact on the competitiveness of the dairy farms and should therefore be taken into account in any medium- to long-term planning.

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