

## EVALUATION OF THE WILLINGNESS OF FARMERS TO INVEST IN MILK PRODUCTION IN THE AREA OF KORÇA, ALBANIA

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### ABSTRACT

Dairy product activity constitutes an awareness of a need or pleasure and assesses demand for information about the products of brands that can satisfy consumers' needs (A.Shtepani, 2017). This study explores farmers' willingness to invest in milk production from the perspective of the consumer. The agricultural sector continues to play a crucial role in development, especially in low-income countries where the sector is large both in terms of aggregate income and total labor force (Dethier, 2011). Based on the interview that we have done, we managed to point out the farmer's approaches to milk products, and the values that will convey this product to Albanian consumers. We conduct a face-to-face survey with farmers and specialists, to highlight the impact of farmers' investments in agricultural products as well as fulfilling the needs of Albanian consumers. The results show that Willingness to invest in milk depends negatively on obstacles to sales, positively on the improvement of investment factors, on the perception of the need to improve investment promotion factors, and on the perception of the current state of the business climate. We hope that this study serves as literature for future research.

**Keywords:** Milk Production, Willingness to pay, Farmers, invest, Korça City.

### INTRODUCTION

Milk production has a long tradition in Albania and still plays an important role in agriculture and consumer behavior. Agriculture is the main source of economic growth in Albania (% of GDP) was reported at 17.66% in 2021, according to the (Bank, 2023). In recent years, exports of agricultural products in Albania have been increasing. Despite the importance of agriculture for the national economy, Albania is a net importer of agricultural products (Ana Kapaj, 2011). In 2021, the quantity of milk collected is approximately 115 thousand tonnes (Instat, 2021). Between 2020 and 2021 the exports of Fermented Milk Products grew by 9.7%, from \$4.71B to \$5.16B. Trade in Fermented Milk Products represents 0.025% of total world trade (OEC, 2023). In 2021, Albania was the number 115 economy in the world in terms of GDP (current US\$), number 131 in total exports, number 123 in total imports, the number 89 economy in terms of GDP per capita (current US\$) and the number 72 most complex economy according to the Economic Complexity Index (ECI) (OEC, 2023) . Milk is among the traditionally produced agricultural goods in Albania.

At the end of the 1990s, the first private milk processing factories were established in different regions of the country. In recent years, the milk industry and, together with it, the milk collection system have been closely aligned in the course of the modernization of structures and technologies. Currently, several modern factories for the processing of milk and its by-products are operating throughout Albania. Milk processing is currently profitable for all small farmers in the area of Korca. This dairy sector analysis aims to give a quantitative and qualitative description of the Albanian dairy sector, addressing both production and processing. Most milk producers in Korca City are semi-subsistence households. The most important and comprehensive trade of this kind is the direct sale of milk to consumers (Beryl Nicholson, 2003). Remittances are a big help in investments in agriculture. The milk processing industry in Albania has been facing very big difficulties in the market for several years due to various problems, including the lack of support schemes for livestock, increased barriers to export, the poor quality of milk in farms, and the informal market. Farmers and many Albanian companies are encountering difficulties in trading livestock products.

## MATERIAL AND METHODS

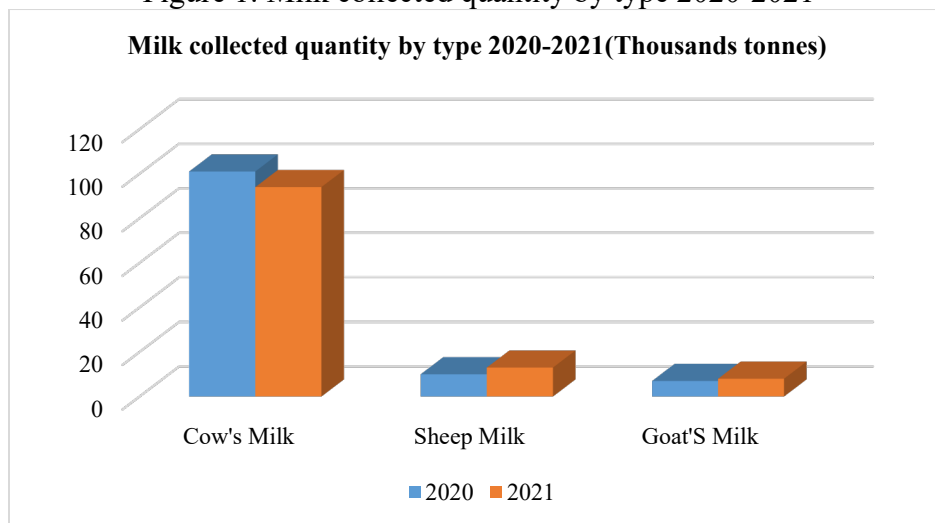
This research basically involves the statistical processing of the data collected in the area of Korça through a real questionnaire. The main questionnaires I used were the one on farmers and the one on specialists, traders, and processing businesses. The questionnaire reflects the current situation of 145 farmers in the Korça area. The district of Korça is among the largest districts in the Republic of Albania. As part of the research, the questionnaires of the farmers of the areas (Maliq, Bulgarec, Drithas, Libonik, Lozhan,) were filled out. The data has been processed with the Eview program.

*Expert panel discussions:* We conducted expert panel discussions to assess the obstacles, factors, and policies in favor of increasing the flow of exports and imports in the agricultural sector.

## RESULTS OF THE STUDY

### *Willingness to invest in milk production.*

Figure 1: Milk collected quantity by type 2020-2021



Source: Statistical survey of milk and milk products, INSTAT

From the total amount of milk collected, about 14 thousand tonnes was used for the production of milk for human consumption, the rest goes for processing. The structure of drinking milk produced is as below: whole milk 86.7 %, semi-skimmed milk 9.1 %, raw milk 3.5 % and skimmed milk 0.7 %.

Hypothesis 1: Willingness to invest in milk production depends on barriers to sales in general, the current state of the business climate, investment factors, and the perception of the need for improvements to encourage investment.

Table 1: Perceptual results of processing variables in E-views.

Dependent Variable: Y3				
Method: ML - Binary Logit				
Sample: 1 147				
Included observations: 146				
Excluded observations: 1				
Convergence achieved after 3 iterations				
Covariance matrix computed using second derivatives				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	2.096565	0.662582	3.164234	0.0016
X1	-0.982348	0.265137	-3.705060	0.0002
Mean dependent var	0.424658	S.D. dependent var	0.495992	
S.E. of regression	0.470326	Akaike info criterion	1.285005	
Sum squared resid	31.85371	Schwarz criterion	1.325877	
Log-likelihood	-91.80540	Hannan-Quinn criteria.	1.301612	
Restr. log-likelihood	-99.53562	Avg. log-likelihood	-0.628804	
LR statistic (1 df)	15.46046	McFadden R-squared	0.077663	
Probability(LR stat)	8.42E-05			
Obs with Dep=0	84	Total obs	146	
Obs with Dep=1	62			

Source: Processing in E-Views by the author, using data from the questionnaire.

It affects X1, i.e. obstacles in general for sales (X1-OBSTACLES FOR SALE)

Table 2: Perceptual results of processing variables in E-views.

Dependent Variable: Y3				
Method: ML - Binary Logit				
Sample: 1 147				
Included observations: 146				
Excluded observations: 1				
Convergence achieved after 3 iterations				
The covariance matrix computed using second derivatives				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.576130	0.463623	-3.399592	0.0007
X2	1.002910	0.332687	3.014579	0.0026
Mean dependent var	0.424658	S.D. dependent var	0.495992	
S.E. of regression	0.480664	Akaike info criterion	1.324026	

Sum squared resid	33.26940	Schwarz criterion	1.364898
Log-likelihood	-94.65392	Hannan-Quinn criteria.	1.340633
Restr. log-likelihood	-99.53562	Avglog-likelihoodod	-0.648315
LR statistic (1 df)	9.763399	McFadden R-squared	0.049045
Probability(LR stat)	0.001780		
Obs with Dep=0	84	Total obs	146
Obs with Dep=1	62		

Source: Processing in E-Views by the author, using data from the questionnaire.

Influences X2 (X2-INVESTMENT FACTORS)

Table 3: Perceptual results of processing variables in E-views.

Dependent Variable: Y3				
Method: ML - Binary Logit				
Sample: 1 147				
Included observations: 145				
Excluded observations: 2				
Convergence achieved after 3 iterations				
Covariance matrix computed using second derivatives				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.301243	0.462455	-2.813771	0.0049
X6	0.736963	0.309463	2.381427	0.0172
Mean dependent var	0.427586	S.D. dependent var		0.496443
S.E. of regression	0.487798	Akaike info criterion		1.351879
Sum squared resid	34.02641	Schwarz criterion		1.392938
Log likelihood	-96.01126	Hannan-Quinn criter.		1.368563
Restr. log likelihood	-98.98029	Avg. log likelihood		-0.662147
LR statistic (1 df)	5.938065	McFadden R-squared		0.029996
Probability(LR stat)	0.014817			
Obs with Dep=0	83	Total obs		145
Obs with Dep=1	62			

Source: Processing in E-Views by the author, using data from the questionnaire.

Affects X6 (X6 CURRENT BUSINESS CLIMATE STATE)

Table 4: Perceptual results of processing variables in E-views.

Dependent Variable: Y3				
Method: ML - Binary Logit				
Sample: 1 147				
Included observations: 146				
Excluded observations: 1				
Convergence achieved after 3 iterations				
The covariance matrix computed using second derivatives				

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	3.522872	0.978737	3.599405	0.0003
X3	-1.209218	0.306250	-3.948470	0.0001
Mean dependent var	0.424658	S.D. dependent var		0.495992
S.E. of regression	0.466449	Akaike info criterion		1.268881
Sum squared resid	31.33069	Schwarz criterion		1.309752
Log-likelihood	-90.62831	Hannan-Quinn criteria.		1.285488
Restr. log-likelihood	-99.53562	Avg. log-likelihood		-0.620742
LR statistic (1 df)	17.81462	McFadden R-squared		0.089489
Probability(LR stat)	2.44E-05			
Obs with Dep=0	84	Total obs		146
Obs with Dep=1	62			

Source: Processing in E-Views by the author, using data from the questionnaire

Affects X3 (X3- UPGRADES)

### Ridge model for factors of willingness to invest in milk.

There is some collinearity between X1, X2, X3, and X6, so when these variables are put together in a model, they may turn out to be insignificant. Collinearity is evidenced by the following correlative overview:

Table 5: Correlation that proves collinearity

	X1	X2	X3	X6
X1	1	-0.651559445855	0.743617404091	-0.422255958396
X2	-0.651559445855	1	-0.644468721357	0.576930495443
X3	0.743617404091	-0.644468721357	1	-0.49155278494
X6	-0.422255958396	0.576930495443	-0.49155278494	1

Source: Processing by the author, using data from the questionnaire.

We use Ridge regression.

Ridge Regression - Y3

Dependent variable: Y3

Independent variables: X1 X2 X3 X6

Number of complete cases: 145

Model Results for Ridge Parameter = 0.7

		<i>Variance</i>
		<i>Inflation</i>
<i>Parameter</i>	<i>Estimate</i>	<i>Factor</i>
CONSTANT	0.84354	
X1	-0.0713895	0.281269
X2	0.0460622	0.290831
X3	-0.105928	0.278629
X6	0.031804	0.325507

Model:

$$Y3 = 0.84354 - 0.0713895 \cdot X1 + 0.0460622 \cdot X2 - 0.105928 \cdot X3 + 0.031804 \cdot X6 + e$$

Willingness to invest in milk depends negatively on obstacles to sales, positively on the improvement of investment factors, on the perception of the need to improve investment promotion factors, and on the perception of the current state of the business climate.

R-Squared = 10.0936 percent

R-Squared (adjusted for d.f.) = 7.52485 percent

Standard Error of Est. = 0.471361

Mean absolute error = 0.440103

Durbin-Watson statistic = 1.96461 (P = 0.4161)

Lag 1 residual autocorrelation = 0.0123835

Residual Analysis

	<i>Estimation</i>	<i>Validation</i>
n	145	
MSE	0.222181	
MAE	0.440103	
MAPE		
ME	-1.69979E-16	
MPE		

## CONCLUSIONS

This procedure is designed to provide estimates of regression coefficients when the independent variables are strongly correlated. By allowing a small amount of it (allowing for small measurement errors), the accuracy of estimates can often be greatly increased. In this case, the fitted regression model is:

The current value of the parameter (ridge) is 0.7. To change the parameter (ridge), press the alternative mouse button and select the option The parameter (ridge) is usually chosen between the values 0 and 1. To determine a good value for the parameter (ridge), the standardized regression coefficients or inflation factors (variance) should be examined. These values are available in the Tabular lists and the graphical option. The R-Squared statistic shows that the generated model explains 10.0936% of the variability in Y3. The adjusted R-Squared statistic, which is most suitable for comparing models with different numbers of independent variables, is 7.52485%. The standard error of estimation shows the standard deviation of the residuals is 0.471361. The mean absolute error (MAE) of 0.440103 is the mean value of the residuals. The Durbin-Watson (DW) statistic tests the residuals to determine if there is any significant correlation based on the order in which they occur in your data file. Since the P value is greater than 0.05, this does not indicate autocorrelation. serial in the residuals at the confidence level of 95.0%.

X1, X2, X3 and X6 are affected. Ridge regression is a technique for analyzing multiple regression data that suffer from multicollinearity.

### SWOT ANALYSIS AND STRATEGIES FOR PROMOTING INVESTMENTS IN THE AREA

Table 5: Swot analysis of the development potentials of the Korca area.

<b>STRENGTH</b>	<b>WEAKNESSES</b>
<ol style="list-style-type: none"> <li>1. Human potential and natural possibilities.</li> <li>2. Cultural-archaeological assets.</li> <li>3. Investments, income from immigration.</li> <li>4. Favorable conditions for diverse varieties of agricultural crops.</li> <li>5. Quite rich natural resources.</li> </ol>	<ol style="list-style-type: none"> <li>1. Small family farming economy.</li> <li>2. Absence of the urban plan of the city.</li> <li>3. The population comes from the area's villages, often without a profession.</li> <li>4. Damage to natural resources.</li> <li>5. Lack of associations and incentives for forms of cooperation between farmers or other activities.</li> <li>6. Lack of crop insurance.</li> </ol>
<b>OPPORTUNITIES</b>	<b>THREATS</b>
<ol style="list-style-type: none"> <li>1. Investments in fruit growing.</li> <li>2. Investments in agro-processing.</li> <li>3. Creation of farmer associations for common problems for agricultural crops.</li> <li>4. Development of tourism in archaeological areas and summer sports</li> <li>5. Devolli Valley — as a future lake</li> <li>6. Development of tourism in the area by making agricultural products available for tasting by tourists.</li> </ol>	<ol style="list-style-type: none"> <li>1. Flooding and lack of investment.</li> <li>2. Conflicts over ownership issues.</li> <li>3. Agriculture and Animal Husbandry are not primary activities.</li> <li>4. The lack of desire from young people to get involved in agricultural activities.</li> <li>5. Lack of information and extensive service for farmers.</li> </ol>

Source: Author, 2023

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