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Factors Affecting the Competitiveness of the Greek Wine Enterprises and Cooperatives

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Abstract— The present paper investigates the effect of certain economic factors on the competitiveness of Greek Wine Enterprises and Unions of Agricultural Cooperatives (UACs). Data on 41 wineries and 10 UACs of Greece was collected for a period of three years (2004-2006). Financial analysis results were used with the help of a fixed effect model-panel data technique- using profitability as dependent variable in order to measure the competitiveness of wineries. The results indicated that the size of the enterprise as well as the square of the capital intensity have a positive influence on the winery's profit.

Key words— competitiveness, profitability, wineries, agricultural cooperatives.

I. INTRODUCTION

The wine sector is one of the most profitable drink industries in the Greek economy. Greece has 130,000 hectares of vines and produces around 4,000 thousand hls which represent 2.5% of the whole European production. This puts it in 14th place in the world, 5th in Europe for vineyard area, and 6th for wine production [1]. The proportion of the total wine production managed by UACs is approximately 32% [2].

The present study analyzes the wine sector using a panel data set for 41 firms and 10 UACs over a three year period (2004-2006) in Greece. The aim of this analysis is to examine those economic factors that affect the competitive level of the wineries. Firstly, the theoretical model, which shows those factors that seems to influence firm's profitability, is presented. Then we estimate these factors by using the appropriate econometric variables in the model. The evaluation of the competitive equation took place with the help of a fixed effect model. Finally, some interesting concluding remarks for wine industry in Greece are included.

II. MODEL SPECIFICATION

A very interesting topic in Industrial Organization is the examination of those parameters that affect the profitability level of a firm. According to Scherer & Ross [3], the firm's profit π of a defined industrial market is derived from the following equation:

$$\Pi_i = P(Q)q_i - c(q_i) \quad (1)$$

where P is the output price, Q is the output quantity, c is the output cost and q_i is the quantity produced from the firm i .

A number of calculations results in the following equation:

$$\frac{PQ - (wL + \lambda p^k K)}{PQ} = \frac{PQ - wL}{pQ} - \lambda \frac{p^k K}{pQ} \quad (2)$$

where

- w : vector of prices of variable inputs
- L : vector of variable inputs
- wL : cost of all variable factors
- λ : rental cost of capital services
- $p^k K$: value of capital assets
- P : output price
- Q : quantity of output

The above equation indicates that the rate of return on sales is a function of several structural and conduct variables.

$$\frac{PQ - wL}{pQ} = f(s, c) + \lambda \frac{p^k K}{pQ} \quad (3)$$

The structural and conduct variables that are calculated and included in the model are the following:

PRS (profitability)	:	net profits/firm's sales
SE (size)	:	total assets
LEV (leverage)	:	total liabilities/total assets
KS (capital intensity)	:	total assets/total sales
KS ²	:	the square of capital intensity (examines the non-linear relation between the winery's profit and the KS)
AG (age)	:	firm's age

Thus, the theoretical model becomes:

$$PRS = a_0 + a_1SE + a_2LEV + a_3AG + a_4KS + a_5KS^2 \quad (4)$$

III. DATA ANALYSIS AND EMPIRICAL RESULTS

A total of 51 greek wineries were included for the years 2004 through 2006. Data for the wineries were obtained from HellaStat annual report [4] while for UACs from personal interviews. The evaluation of the competitive equation was carried out using a fixed effect model.

According to the results, the size of the enterprise exhibits a positive and statistically significant influence on the net profit margin. This happens because the bigger size allows the firm to exploit the economies of size either because of the use of technology which makes it more productive or because of better administration which means more effective organization and more equitable investment choices. Consequently, bigger enterprises are more likely to enjoy bigger and more stable profits and thus be more competitive.

The leverage indicator has a negative impact on profitability, indicating that the right use of the loans is an important factor for the enterprises' profits. If the wineries do not operate their loans properly, they will not succeed an increase in their profitability. Apart from this, the wrong use of the loans may lead them to bankruptcy.

The age of the enterprise exhibits a negative but not statistically significant influence on the net profit margin.

The square of the capital intensity factor has a positive impact on profitability, signifying that an increase of the capital intensity leads to a profit increase up to a certain point. Beyond that point, every single increase in capital intensity will incur a reduction in profits for the wineries.

According to the fixed effect model, R² is 59.48%, indicating that the independent variables explain the variability of the dependent variable by this amount.

Table 1: Results of the profitability equation, 2004-2006

Variables	Coefficient	T- Ratio	Probability
SE Total Assets (size)	6.13E-08	2.12	0.04
LEV Dept Equity Ratio (leverage)	-0.30	-1.74	0.09
AG Operating years	-0.15	-0.25	0.80
KS Capital Intensity	-0.30	-1.01	0.32
KS ² Square of Capital Intensity	1,14E-03	6.71	0.00
R ² = 59.48 %			

IV. CONCLUSIONS

The Food industry in Europe is presently in a state of transformation due to economic, social and legal changes that are taking place. These include the withdrawal of government intervention in the market, an increase in global competition, new technological developments, changing regulation framework and new consumer demands. All these factors influence the firm's competitiveness, putting them under great pressure to adapt themselves to the new situation.

The aim of this paper was to examine the factors that mostly affect and determine the competitiveness level of the Greek wine enterprises. The sample used comprised 41 Greek wineries and 10 UACs for the years 2004-2006. Competitiveness level was measured with the help of net profit margin and was estimated using a fixed effect model.

Large-sized wineries can apply a wide variety of competitive strategies (differentiation, innovation, diversification, publicity as well as reliable distribution channels), leading to an increase in profitability. In addition the large-sized wineries can operate their own capitals well which leads to an increase in their net profits. For these reasons, merger seems to be a solution with many advantages for a variety of Greek wineries

Leverage, affects negatively wineries' profitability. However, those wineries that operate properly their loans-using them for investments (growth strategies, advertisement, new technologies)-, are able to increase their net profits.

Regarding UACs, in spite of the fact that they are large-sized enterprises with many operating years and significant experience, the majority of them are not profitable. Their high leverage level as well as the high operating cost results in difficulties in adopting expensive strategies that raise the competitive level of a cooperative. In addition, the lack of the right management enlarges furthermore the existing problems. In the near future we are going to study how the management of the wineries affects their profitability.

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