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Financial Ratio and Efficiency Analysis as a Competitive Advantage of Wine Manufacturing Firms. The Case of Greece

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Abstract

In the Greek economy, the wine industry is one of the most important sectors, not just for the domestic beverage market, but also for the development and promotion of Greek traditional products abroad. The wine sector has been recognized as one of the most significant economic activities in many countries, both in terms of employment and revenue. Financial analysis is crucial to understanding the economic condition of wine production companies and ensuring the sustainability of the industry. Financial ratio analysis provides insights into the factors that determine economic utility, which is increasing profitability, reducing risk, and providing liquidity to economic entities. The main purpose of the paper is to examine and analyze the financial situation of companies active in the wine industry. This will evaluate how well they adapt to the changing market environment. By analyzing the financial profile of the companies, an effort was made to identify the problems that they faced as well as analyzed their efficiency. Cluster analysis would be conducted in order to determine their level of competition. According to the results, large companies were able to pay their current liabilities, fixed costs, interest, dividends, as well as better handle any current losses. The large companies have a high level of solvency and display rapid circulation of their stocks. Small and medium-sized businesses had difficulties meeting their current obligations as well as dealing with potential losses. Indicators measuring the efficiency of the utilization of assets in large and medium-sized enterprises were relatively stable, but a significant over-investment of capital relative to sales could lead to obligations not being met in the future. The debt to assets ratio of large companies was higher than that of medium and small companies, which must be addressed by increasing the firms' liquidity to avoid debt service problems.

1. Introduction

Greek wine has a very long history, which dates back to ancient Greece, and is the most famous wine in the world due to the continued cultivating of vines and producing of wine. Historically, winemaking has been a part of the culture of the majority of Mediterranean peoples since ancient times. Wine is consumed in large quantities worldwide today, while its health benefits are well known. Greek wines have improved considerably in quality and reputation in recent years, with many companies investing in modernization. Many producers cultivate both internationally recognized varieties and Greek varieties. The wine sector has been recognized as one of the most significant economic activities in many countries, both in terms of employment and revenue (Bigliardi & Galati, 2013; Menrad, 2004). In the Greek economy, the wine industry is one of the most important sectors, not just for the domestic beverage market, but also for the development and promotion of Greek traditional products abroad. Wine is produced in Greece by several large wineries, medium-sized and small (local) wineries as well as agricultural cooperative associations (Vlachos, 2017). Most of the bottled wine market is controlled by large firms, which offer their products through extensive distribution networks all across the country. To gain a prominent position in the international wine market, structural changes have been made in the wine industry in recent years to boost Greek wines' competitiveness. According to the awards they continue to receive in international competitions, bottled Greek wines have greatly improved in quality and reputation in recent years. The sector has a strong export orientation. Greek wines are mostly exported to Germany, the USA, Canada, France, and Belgium, where the first three countries have strong expat communities that consume most of the exports (Vlachos, 2017). In terms of volume produced, Greece ranks seventh in the EU (approximately 2 percent of total production), while Greece consumes 25 liters of wine per capita each year (GAIN, 2015). For wine industries to be viable and profitable, opportunity costs must be considered (O'Donoghue et al., 2016). Financial analysis is crucial to understanding the economic condition of wine production companies and ensuring the sustainability of the industry (Simonovska et al., 2014). Financial analysis is used to assess entities' creditworthiness, allowing them to determine their financial position, which is the foundation for their investment proposals (Niarchos, 2004; Vassiliou & Iriotis, 2008). Financial ratio analysis provides insights into the factors that determine economic utility, which is increasing profitability, reducing risk, and providing liquidity to economic entities (Barry et al., 2000). The more years in which the financial statements are examined using the ratios, the greater the reliability of the results (Konstantinidis

et al., 2021a). As has been widely reported, companies use a variety of methods to measure their performance in order to remain competitive and profitable. It is crucial to integrate performance measures into both the operations of the company and its hierarchy, so that goals and actions can coexist (Konstantinidis et al., 2021b).

Several authors have studied the wine industry, because of its importance in the economy. A study by Bianchini et al. (2008) compares wine cooperatives in France and Italy based on development, prices, shares of sales, added value, and remuneration of members (per hectolitre and hectare). Financial ratio analysis has been procced in collective data to identify the relationships between organizational and structural variables, management approaches, and performance indicators. In another paper, Declerck and Viviani (2010), assess the ability of French wineries to overcome the financial crisis by applying financial ratio analysis. Specifically, with the use of total sales, sales growth, leverage, and the EBIT growth rate, they concluded that to absorb part of the impact of the wine crisis on their members, cooperatives increased their account payables to their members. Newton et al. (2015), with the use of financial and operational data from a proprietary database of 71 United States wineries, encompassing five continuous years (2006-2010), studied how the differentiation strategies and financial performance over time affect the investigation into small-to-medium sized wine businesses. Migliaccio and Tucci (2019), used a balance sheet analysis, analyzed the capital, financial, economic, and income dynamics of Italian wine producers during and after the global financial crisis (2008-2017). In a recent study by Goncharuk (2018), economic-technical indicators were used to compare German and Ukrainian wineries. The results of financial statements are naturally affected by economic technical performances. Chinnici et al. (2013), based on a study of Sicilian wine producers, examined balance sheets (2008-2009) in order to determine the performance of wine producers; in particular, they examined operational factors that could impact both the performance and the efficiency of the segment. They provided interesting methodological assumptions that influenced this research despite its limitations in space and time. Amadieu and Viviani (2011), in their paper, presented an empirical study of the relationship between intangible expenses and the financial performance of French wine companies. Using moment-based analysis, they analyzed how intangible and tangible expenses impact the mean, variance, and skewness of the profit. An analysis of intangible expenses as a risk management tool is presented in this study.

There are three main groups of business and economic studies on the Greek wine sector: export determinants and performance; tourism and consumer studies. Through the analysis of primary data, Karelakis et al. (2008), identified that export competence and export channel knowledge were the key determinants of Greek wine firms' export performance. Another study examines the experiences of wine consumers from the United Kingdom (UK) who have visited Greece on vacation and found that visiting an area with a territorial certification in wine

production is not very significant (Alamanos et al., 2016). Alebaki et al. (2015), in their work, attempted to capture the multiple facets of the motivations for wine tourism by focusing on six motivational factors: vineyard esthetics, wine tasting, wine knowledge, as well as familiarity, reputation, and novelty. Chrysochou et al. (2012) found that price, quality, and convenient packaging are among the most important attributes when choosing cask wine, while brand, grape variety, and origin come in the least important positions.

According to the above and taking into consideration the globalization and the conditions that the wine industries are forced to operate and the difficulties that Greek companies of every size and industry were faced with a multitude of complex financial problems (Pazarskis et al., 2018), the systematic study of financial situation and competitiveness is considered to be necessary.

The main purpose of the paper is to examine and analyze the financial situation of companies active in the wine industry. This will evaluate how well they adapt to the changing market environment. By analyzing the financial profile of the companies, an effort will be made to identify the problems that they face as well as analyze their efficiency. Finally, a typological analysis will be conducted in order to determine their level of competition.

2. Materials and Methods

According to Elstat (2019), in Greece, there are 480 wine industries. There are a few large wineries, many small and medium-sized wine companies with large production volumes, a wide distribution network, and high export sales performance, and a significant number of small producers who have their own estates and advanced equipment and penetrate the market with a dynamic distribution network and quality products. Moreover, in this sector, there is a small number of wine cooperatives that produce wine mostly locally, mainly in bulk.

The analysis of the financial position of companies was based upon data collected from their annual balance sheets, as announced by the ICAP GROUP (2010), study on the wine sector. It is therefore an analysis of secondary data, which have been published by the companies themselves.

The methodology followed was based primarily on the analysis of secondary data through qualitative indicators and then on hierarchical cluster analysis (Hierarchical Cluster Analysis) of companies using SPSS software. From the total number of wine industries that exist in Greece, we choose to study the fifty biggest enterprises according to their turnover. The sample of 50 companies was divided into three major categories based on the turnover they had in the years 2014-2018. This categorization was as follows:

1) Large companies: Turnover from €5 million and up;

2) Medium companies: Turnover from 2 - 5 million € and;

3) Small companies: Turnover from 0.5 to 2 million €.

In the large companies, there are 10 wine industries, in the medium class there are 17 and in the small class, there are 10. As a result of dividing the sample into

three categories, a comparative analysis of the results can be performed based on the sales volume, as well as the differences that companies present within their operating modes and strategies. The balance sheet data were used to estimate a number of financial ratios. Ratio analysis is one of the most popular and dynamic methods of analyzing financial data (Niarchos, 2004). In the present study, the indicators that were calculated referred to the Liquidity, Risk, and Efficiency of the operation of the unit, and that was considered by many authors suitable to outline the course and viability of a business (Brealey et al., 2006). The indicators were calculated initially for each business. The average of the indicators was then calculated.

The ratios that were selected to describe the financial profile of the business units were categorized as follows: Liquidity Ratios, Activity Ratios, Profitability Ratios, and Financial Leverage Ratios.

After extracting the results from the indexes, a cluster analysis typology has been developed for each of 50 business units in the winery sector, in order to identify similar units-clusters, based on their financial profile and specific economic indicators, highlighting any similarities or differences (Ferraris & Grieco, 2015), regardless of their initial ranking in large, medium and small enterprises. Cluster analysis is considered to be particularly important and timely, as it can enable a rational distribution and use of production factors, based on the comparative advantages of each group of companies. Based on the financial behavior of the wine companies, the clusters can also be used to identify the individual needs of wine companies in terms of financing or enhancing their development (Giacosa et al., 2016). The sample assesses the wine sector generally based on technical and economic parameters, in order to construct clusters with an apparent economic orientation (Giacosa et al., 2016). A Hierarchical Cluster Analysis was used to develop business typologies based on financial indicators that have been analyzed. The Ward criterion and Euclidean square were used to form clusters (Hair et al., 1995; Sharma, 1996). The analysis was performed with SPSS V. 11.5 and PermuCLUSTER 1.0 was used to check the stability of the cluster analysis results as a function of the order of entry of the companies in the analysis. For this reason, the following parameters are selected as a means of calculating the average for each of the 50 business units.

Acid test ratio (Y1), Working Capital Ratio to Assets ratio (Y2), Cash ratio (Y3), Inventory turnover ratio (Y4), Receivables turnover ratio (Y5), Return on assets (Y6), Return on net worth (Y7), Debt to assets ratio (Y8). The above ratios were chosen because according to the literature they show the commercial orientation of the companies (Halici & Erhan, 2013; Kariyawasam, 2019).

3. Results

The results of Table 1, show that large companies, according to the acid test ratio, have satisfactory prices, which are above the unit throughout 2014-2018 (prices between 0.83 to 1.29), which also applies to small businesses.

Table 1. Financial ratio analysis during 2014-2018.

	2014	2015	2016	2017	2018
Acid test Ratio					
Large companies	0.83	1.08	1.01	1.13	1.29
Medium companies	1.08	0.96	0.87	0.83	0.98
Small companies	1.06	0.98	1.24	1.11	0.87
Working capital/assets ratio					
Large companies	0.15	0.22	0.17	0.23	0.23
Medium companies	0.18	0.20	0.13	0.19	0.17
Small companies	0.13	0.18	0.16	0.18	0.12
Cash ratio					
Large companies	0.03	0.04	0.02	0.04	0.03
Medium companies	0.07	0.04	0.06	0.04	0.06
Small companies	0.11	0.10	0.09	0.10	0.08
Inventories Turnover ratio					
Large companies	1.16	0.96	0.95	0.88	0.85
Medium companies	1.56	1.01	1.23	1.15	1.12
Small companies	1.61	0.85	1.59	1.31	1.28
Receivables Turnover ratio					
Large companies	0.96	0.76	0.80	0.76	0.74
Medium companies	1.12	0.84	1.07	0.94	0.87
Small companies	1.35	0.73	0.98	0.94	0.92
Return on assets (ROA)					
Large companies	0.01	0.00	0.01	0.02	0.02
Medium companies	0.01	0.02	0.02	0.01	0.03
Small companies	0.01	0.01	0.01	−0.02	0.01
Return on net worth					
Large companies	−0.11	−0.03	0.00	0.03	0.01
Medium companies	−0.05	0.05	0.23	0.02	0.08
Small companies	0.03	0.04	0.01	−0.04	0.01
Debt to assets ratio					
Large companies	0.65	0.68	0.62	0.61	0.68
Medium companies	0.51	0.56	0.54	0.57	0.56
Small companies	0.51	0.58	0.54	0.61	0.57

Medium-sized enterprises have prices (between 0.83 to 1.08) that are constantly below the unit, suggesting that these enterprises depend on future sales to ensure liquidity. As a general rule, large companies show a good current financial position if their immediate liquid assets exceed their current liabilities.

In terms of the working capital ratio to total assets, it appears that the potential liquidity reserve of large companies throughout the period 2014-2018 was at satisfactory levels, and even in 2017-2018, the index price was 0.06 higher than in 2016. The working capital ratio to total assets prices are between 0.17 to 0.20for medium companies and 0.12 to 0.18 for small companies.

As can be seen from the cash ratio, the cash of all three categories of companies is in a marginally downward trend, with the exception of medium-sized businesses, which are showing an increase for 2018 (0.06). The decrease in cash coincides with a low index, which is not a very encouraging development for companies.

The inventory turnover ratio shows that large companies maintain lower rates (prices between 0.85 to 1.16) than medium (1.01 - 1.56) and small businesses (0.85 - 1.61), which may be related to the low profitability of small and medium-sized enterprises due to large stockholdings. However, the lower turnover shown by large companies is likely to be associated with a higher gross profit margin (Niarchos, 2004), which is encouraging for such companies.

Taking into account the values of the receivables turnover ratio, it appears that medium-sized enterprises (prices between 0.84 to 1.12) are the most successful at collecting receivables, followed by the small (prices between 0.92 to 1.35) and large firms (prices between 0.74 to 0.96), which indicates differences in the lending policies of the various corporations. However, each company's credit policy is closely tied to its commercial policy, so both of these should be taken into consideration when drawing conclusions (Ferraris & Grieco, 2015).

Return on assets ratio is marginally positive for large companies (prices between 0.00 to 0.02) and lower for medium and small companies. The very low to negative prices of small businesses in 2017 (−0.02) indicates a survival problem for small businesses. This value of the index indicates that the company's assets are being used inefficiently.

For large enterprises, the mean value price of five years of return on net worth ratio is negative, while for medium and small businesses, the mean value of five years is marginally positive. The very low and negative prices for small businesses, especially for 2017 (−0.04), reveal a survival problem for small businesses. The index value is negative, which indicates that the company has inefficiently used equity.

For large enterprises, the Debt to assets ratio shows higher prices (prices between 0.61 to 0.68) than for medium (prices between 0.51 to 0.57) and small enterprises (prices between 0.51 to 0.61). Higher values of the index, which are recorded for large companies, create a problem for business leaders since they indicate financial insecurities in the event of their failure, in contrast to medium

and small companies, where such risks are lower because prices are recorded at lower levels.

The hierarchical analysis of the sample revealed three clusters of business units in the wine sector, with 8 companies in the first (16%), 19 companies in the second (38%), and 23 companies in the third (46%), (Table 2).

The results of Table 3, show that according to the Acid test ratio, the companies that are in the 1st cluster (0.97) have differences in relation to the companies that are in the 2nd (1.068) and 3rd (1.022) clusters. For the working capital ratio to total assets, the 1st (0.170) and 3rd (0.174) cluster companies differ from the 2nd (0.222) cluster companies. The cash ratio differentiates the companies in the 2nd (0.232) and 3rd (0.029) clusters from the companies in the 1st (0.089) cluster, while for the inventory turnover ratio, the differentiation is between the companies in the 3rd clusters of the sample. Similar results can also be found for the receivables turnover ratio, as in this index there is a differentiation between the companies in all clusters of the sample. There is also a difference between the companies of the 2nd (0.018) and 3rd (0.021) clusters in terms of return on assets ratio, whereas there is a difference in terms of return on net worth ratio between the companies of all clusters of the sample. Regarding the Debt to assets ratio, there is no differentiation between the companies of the sample in the three clusters, a feature found only in this ratio.

Based on the results, the companies of the 3rd cluster demonstrate the best economic characteristics among the companies of the 2nd and 3rd clusters. This is because the prices of the 3rd cluster are among the highest of the three clusters.

Table 2. Description of clusters.

Clusters	Number of wine companies	Percentage (%)
C_1	8	16
C_2	19	38
C_3	23	46

Table 3. Profile of clusters according to financial ratios.

Clusters	Acid test ratio	Working capital to assets ratio	Cash ratio	Inventory turnover ratio	Receivable turnover ratio	Return on assets ratio	Return on net worth ratio	Debt to assets ratio
	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6	Y_7	Y_8
C_1	0.97[a]	0.170[a]	0.089[a]	1.28[a]	1,10[a]	0.015[a]	2.467[a]	0.561[a]
C_2	1.068[b]	0.222[b]	0.032[b]	0.98[b]	0.86[b]	0.018[b]	2.000[b]	0.551[a]
C_3	1.022[b]	0.174[a]	0.029[b]	0.77[c]	0.98[c]	0.021[b]	2.130[c]	0.548[a]

According to the results of the respective Dunnett T3 and Turkey tests, the averages of the columns with different letters differ significantly by a significance level of * = 0.05.

4. Discussion and Conclusions

From the analysis of the fifty wine companies examined within the context of this work, it appears that profits for companies in the sector have decreased significantly in recent years, while losses were recorded in 2017 and 2018. However, this doesn't mean that the wine industry as a whole is not becoming viable (outside of individual cases). Despite this, the current economic situation in the country has affected the profitability of many businesses in recent years. This is understandable and completely expected since the decline in consumer purchasing power has a deterrent effect on business sales as well as negatively affecting their operations.

Generally, large companies are able to pay their current liabilities, fixed costs, interest, dividends, as well as better handle any current losses. The large companies have a high level of solvency and display rapid circulation of their stocks. Small and medium-sized businesses may have a tougher time meeting their current obligations as well as dealing with potential losses. Indicators measuring the efficiency of the utilization of assets in large and medium-sized enterprises are relatively stable, but a significant over-investment of capital relative to sales could lead to obligations not being met in the future. The debt to assets ratio of large companies is higher than that of medium and small companies, which must be addressed by increasing the firms' liquidity to avoid debt service problems.

In this difficult economic time for our country, it is essential for the wine industry and rural areas to be viable. For this reason, it is suggested the reduction of the tax in order for entrepreneurship to be stimulated, because reduction of taxes will lead to an increase in the opportunity costs of entrepreneurship (Darnihamedani et al., 2018). Moreover, the increasing repayment period of loans, which have been granted by companies to credit institutions should lead to the long-term survival of the companies (Tsiouni et al., 2021). Finally, credit institutions must be recapitalized and strengthened in order to provide low-interest loans to small and very small businesses. Thus, compared to large companies, small businesses will be able to keep up with changing markets, respond to new opportunities, and rapidly adapt to economic upswings (Luo et al., 2018).

Despite the fact that we are limited to using fifty companies in the industry, their high market share can lead to safe conclusions and policy measures for the industry that are of interest to both academics and politicians. Future research will focus on how the firms in this specific group perform in a more difficult economic environment resulting from the appearance of COVID-19. It is generally accepted that the pandemics of COVID-19 resulted in lockdowns and led to many firms closing financial losses.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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