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Production and Business Results of Wine Producers in Continental and Adriatic Croatia

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Abstract

Some of the main characteristics of Croatian wine growing are small vineyard areas, small share in European wine production, and negative export-import balance. Production of wine takes place in two different regions (Adriatic and Continental), and at wine growing farms and bigger wineries. Through FADN and Croatian Financial Agency (FINA) data financial indicators were calculated. Main findings are that Croatian wine farms lag behind to wine leading countries (France and Spain) in terms of income and profit (Gross Farm income, Farm Net Value Added and Farm Net Income). Comparing wine growing farms with all farms in Croatia it can be concluded that wine farms perform better in total output, gross margin and farm net value added. Debt-assets ratio (D/A) of wine farms is higher comparing to all other farms. Our calculations showed that wineries in the Continental region perform better than those in Adriatic region. In regards with the size, large wineries (above 2 million Euro value of assets) show better financial indicators comparing with small wineries.

Keywords: wine sector; Croatia; wine regions; comparison; financial analysis

1. Introduction

Wine sector in Croatia is one of the most important sectors in agriculture. In the Croatian Act on Agriculture, wine sector is defined as one of the strategic sectors in Croatia (Bedeck and Njavro, 2016). According to national statistics, the total area of vineyards was 21,900 hectares in 2017. Wine production in Croatia is carried out in both of two regions, namely Continental and Adriatic. Each region has quite specific growing conditions, from soil type, air temperatures, and precipitations to typically grown varieties. The Continental region has a long history of growing mainly white grape varieties, including the most prevalent variety Graševina (Eng. Italian Riesling). Climate conditions in the continental region are good for grape growing, including many sunny days, especially in the eastern part. On the other hand, in most of the Adriatic region prevails mild subtropical climate influenced by the Adriatic sea on one side and mountains on the other. The region consists of coast and Adriatic islands, and among predominantly red grape varieties, the most common is Plavac Mali.

We distinguish two problems as the most troublesome for wine production in Croatia: unfavourable wine business structure and growing import. The unfavorable structure results in poor visibility of the Croatian wines and low competitiveness on the international market. The import of wine in Croatia is four times bigger than the export, and main importing countries are Macedonia, France, and Italy. Main barriers to export to some countries are market policy barriers, poor financial, logistic and marketing performance, and not exactly known types of wine (Jakšić et al., 2016). Croatian wine business takes place on family farms as well as in large wineries. Bedek (2018) found that small family farms are more successful than big wineries, because of higher liquidity and lower indebtedness compared to large wineries characterized by poor management and capacity utilization. Proximity to touristic market is the major opportunity of wine farms in the Adriatic region. Together with the cultural heritage, gastronomy and landscape, wine (mainly produced from autochthonous varieties) is important segment of tourist offer (Alpeza et al., 2014). Very often, wine production is supported by local communities through co-financing of projects (research and innovation) and marketing activities such as participation on fairs abroad or within the country.

The objective of the paper is to comprehend the present situation and main factors influencing the Croatian wine sector, by investigating and comparing the business performance of wine producers with respect to their size (small and large), and production region (Continental and Adriatic). This paper discusses the state of wine production in Croatia, using indicators such as total production, utilized area of vineyards, consumption, export, import, and comparison them with leading wine countries. Finally, based on the discussion and findings, future prospects of the wine sector in Croatia will be argued.

Hypotheses of this paper are (1) that small wineries perform better than big wineries, and (2) that wine producers in the Adriatic region have better business results than those in the Continental region.

The research is based on the following secondary data sources: Farm Accountancy Data Network (FADN) database, Financial Agency (FINA) Annual Financial Statements Registry, Vineyard Register, and Croatian Bureau of Statistics. The analysis covers the period of five years: 2012-2016. For the business performance analysis, we used margins (EBITDA and profit margin), profitability ratio (ROA), and an indicator of indebtedness (debt to assets ratio). Furthermore, business results of Croatian producers were compared with results of leading EU wine producing countries for benchmarking.

To test the differences in performance indicators by region and by size of firms was used t-test for means. Correlation analysis was used to test the association between business performance ratios and key items of the financial statements (assets, revenues, expenditures, equity, liabilities).

2. Results

2.1. Wine Sector

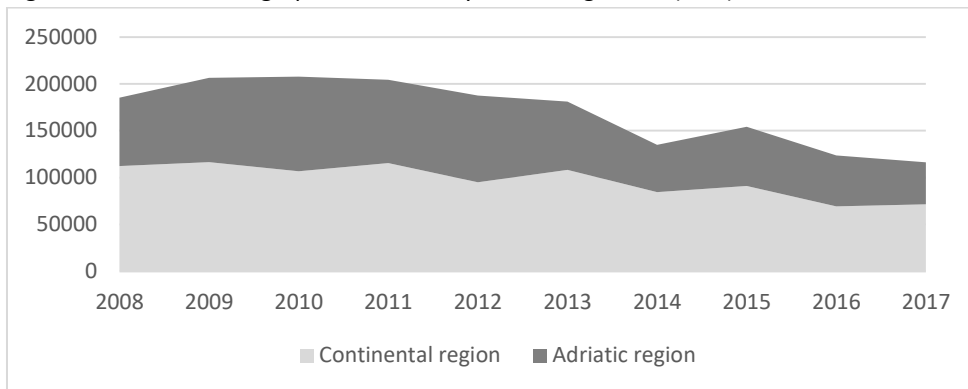
Wine making sector is an important part of Croatian agriculture with a long tradition and market identity especially through autochthonous varieties. Wine production contributes to the touristic offer, and provides income, and employment to numerous small farms (Jakšić et al., 2016).

Grape and wine production were an integral part of Croatian history and culture as far as from ancient times. With lots of downs and some ups in the last hundred and fifty years, like epidemics of phylloxera at the beginning of 19th century, socio-economics and market experiment during socialism, transition and war during nineties, the production of wine in Croatia makes up only a small part of the total production in the EU. It is uncompetitive at the global stage and hardly recognized at the World's wines maps. Nevertheless, viticulture and oenology in Croatia went through the renaissance in the last twenty years. Quality of wine notably improved as well as marketing. The number of small and medium wine growers, especially family farms with wine production increased. Family farms have the highest share in vineyard areas, but they lack economy of size, management and marketing knowledge, bargaining power against powerful retail chains and access to the

capital (Bedek and Njavro, 2015). With that on the side, the major opportunities are a variety of climate and terroir, the large value in autochthonous varieties, tourism consumption including the development of rural tourism, and access to EU market.

Grape vine areas in Croatia are divided into two regions: Continental and Adriatic. Each region is characterized by different geographical, geological, agricultural and economic traits. In the year 2017 farmers in Croatia utilized about 1,5 million hectares of agricultural area. 21.9 thousand hectares or about 1,5% was under vineyard. The area under vineyards is decreasing in the absolute numbers (from 33,741 ha in 2008 to 21,900 in 2017) as well as in relative share in utilised agricultural area (UAA) (from 2.61% to 1.46% in the mentioned period) (Croatian Bureau of Statistics, 2017). The quantity of produced grape was decreasing in the period 2008-2017. The quantity of wine produced dropped significantly (Figure 1). Just for comparison, EU has 3.3 million hectares under vineyards (45% of World areas) and produce 17.3 billion liters (Comité Européen des Entreprises Vins, 2015). The share of Croatia in the EU total is 0.76% in vineyards and 0.4% in wine production.

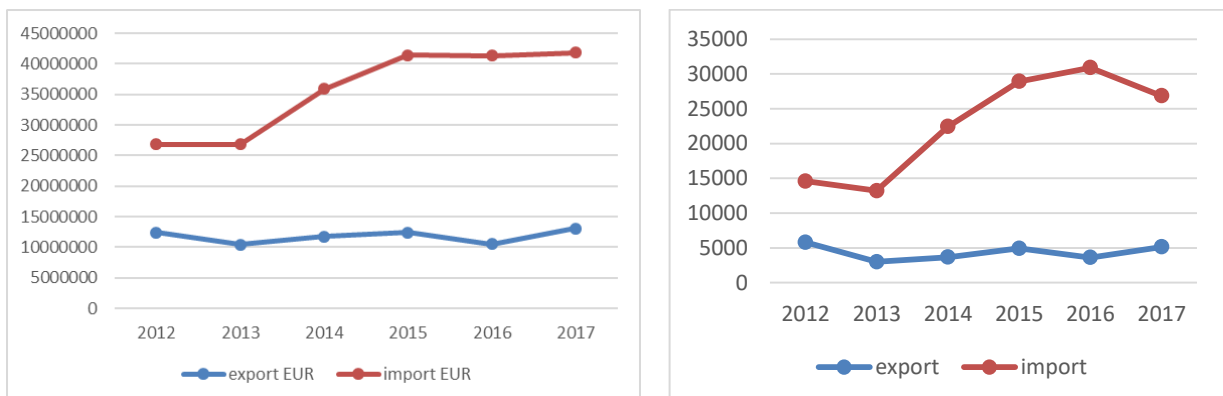
Figure 1. Production of grapes in Croatia by NUTS2 regions in (t/ha)



Source: Agricultural statistics, www.dzs.hr

Human consumption of wine per capita in Croatia is 22.03 liters (Croatian Bureau of Statistics, 2017.), and it is rather constant. The same applies to total domestic use of wine which is about 1 million hl. While the production of wine is decreasing, import is significant and constantly growing (Figure 2). Self-sufficiency rate is 75.79%. (Croatian Bureau of Statistics, 2017).

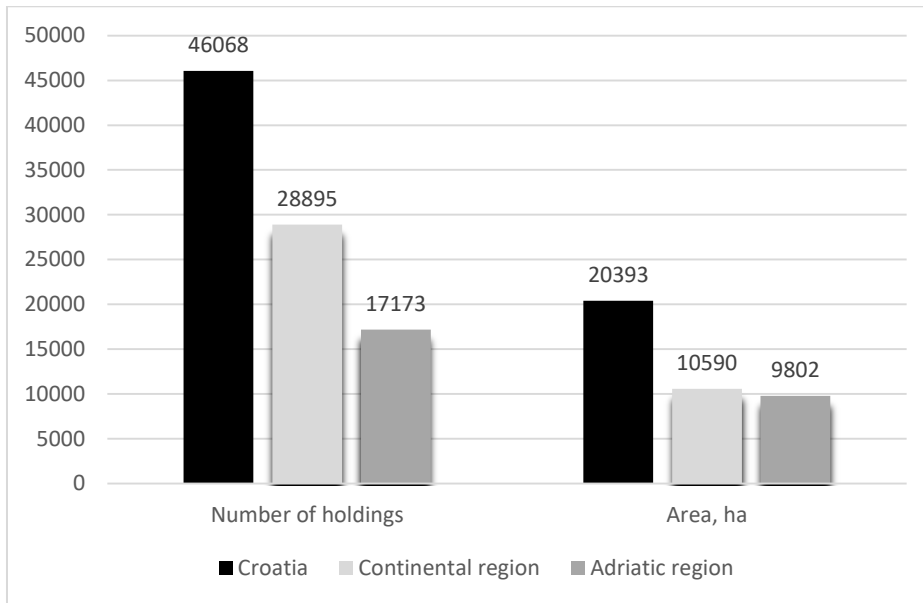
Figure 2. Wine import and export (left-euros; right-tones)



Source: Agricultural statistics, www.dzs.hr

By rough calculation of export and import prices, Croatian wines achieve 2.8 times higher average export price calculated per 1 kilogram (4.30 US Dollar (USD)) than wines imported to Croatia (1.54 USD) for period 2006-2013. (Jakšić et al., 2016).

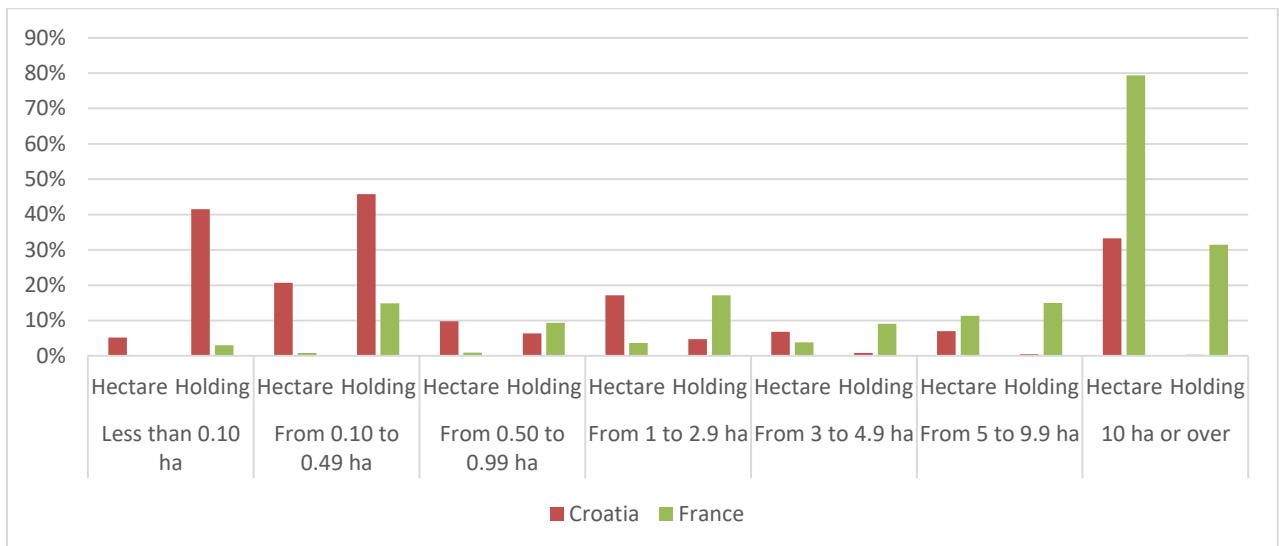
Figure 3. Number of Holdings and Total Area under Vine (2015)



Source: Agricultural statistics, www.dzs.hr

Small wine farms dominate the sector. About 40% of all wine farms utilise less than 0.1 ha per farm! They utilize 5% of the area all together. Farms above 10 ha have a share of 3% in the total number of holdings, but they utilise 33% of the area.

Figure 4. Comparison of wine-grower holdings in France and Croatia by size class and area (%)



Source: Eurostat, 2015

Structure of the wine farms by size classes follows the situation at the EU level. However, in the global leaders like France (Figure 4), larger farm are dominant. In Italy medium-size farms prevail, while the structure of farms (number of holdings by size class and area by size class) does not differ a lot from Croatia.

Unfavorable structure of the farms reflects on, already mentioned lack of competitiveness of Croatian wine farms. This is evident from business performance indicators of Croatian wine farms which have five fold, tenfold, and twentyfold lower farm net value added than farms in Spain, Germany, and France respectively.

Table 1. Average business results for specialist wine farms (Euro) (2015)

Country	Gross Farm Income (SE410)	Farm Net Value Added (SE415)	Farm Net Income (SE420)	Farm Net Value Added / AWU	Family Farm Income / FWU
Germany	93,961	76,848	48,710	31,398	29,724
Spain	33,921	29,392	21,373	19,974	20,036
France	156,619	131,589	71,167	46,747	55,791
Croatia	14,636	6,650	4,959	3,841	3,095

Source: FADN

During the period 2014-2016, 65 specialist wine farms were included in the Croatian FADN sample representing the population of about 480 farms. This is 4.2% of the whole FADN sample, where 1,553 farms were tracked over three years. The FADN sample has changed in three years in terms of number and size of specialist wine farms. In 2016 the sample was the largest and the average area of vineyards per farm was 5.58 ha.

The average values of selected business indicators from FADN for wine producing farms are slightly higher than for the entire FADN sample. However, for most indicators, these differences are not significant (Table 2). The only exceptions are the current ratio and debt to assets ratio. Specialist wine farms have the current ratio above average (0.42 compared to 0.17), but it is still quite below preferable values. Wine producers are also significantly more indebted than an average farm because their debt to assets ratio is higher than average for 37% (2.63 to 1.92 respectively).

Table 2. Selected farm business indicators of FADN farms in Croatia

	Mean	Median	Standard Deviation	Coefficient of variation
All farms (N=1,553)				
Total labour, AWU	2.31	1.95	7.69	333%
Total output, HRK	467,129	187,725	2,524,025	540%
Gross margin, HRK	150,558	29,020	1,299,537	863%
Farm Net Value Added, HRK	217,117	70,776	1,847,289	851%
Total assets, HRK	1,880,988	845,820	5,066,271	269%
Current ratio	0.17	0	1.39	830%
Debt to assets ratio	1.92	0	7.47	390%
Wine producers, all (N=65)				
Total labour, AWU	2.36	1.64	4.55	193%
Total output, HRK	504,671	125,667	1,871,749	371%
Gross margin, HRK	206,445	57,666	596,754	289%
Farm Net Value Added, HRK	290,505	56,996	1,251,248	431%
Total assets, HRK	1,796,011	930,158	2,654,502	148%
Current ratio	0.42	0.00	2.17	515%
Debt to assets ratio	2.63	0.00	9.67	368%

What is also evident in the table are great variability and asymmetry of distribution of most indicators. For example, while the mean of the total output for wine producers is 504,671 HRK, the median for the same indicator is 125,667 HRK, and the coefficient of variation CV=371%. High variability and data dispersion are characteristic for the entire FADN data set.

Data analysis by region did not reveal any significant differences in observed indicators between the two regions.

2.2. Croatian Wine Sector Business Analysis

As stated before, Croatian wine production is carried out in wineries and small family farms that are engaged in the production of grapes and making of wines. The hypothesis of this paper are (1) that small family farms perform better than large wineries, and (2) wine producers in the Adriatic region have better business results than those in the Continental region.

Availability of data aimed the research to compare business results of small wineries (up to 2 million Euros worth of assets) and large one (above 2 million in assets) and producers in the Adriatic region against ones in the Continental region.

Financial data used in the analysis were taken from FINA data base. All business entities in Croatia that operates as legal persons are obliged to submit their financial statements to FINA at least once a year. The FADN data base includes all agricultural holdings, regardless of their formal status, and many of them do not apply double-entry accounting and keep does not issue financial statements. Therefore, FINA database which was used here is considered more reliable for financial analysis of business entities.

In FINA database there were available annual financial statements for 200 wineries. However, many of them were missing a significant part of information, so we used data for 95 wineries with complete sets of information. Out of 95 analysed wineries, 58 are located in Adriatic region (61%) and 37 in Continental region (39%). Financial analysis is conducted for a 5 year period, from 2012 to 2016. According to FINA, 78% of entities are small entities, and 22% are considered large.

Table 3: Number of wineries in Croatia according to region

Region	Number of wineries	% of wineries
Adriatic region	58	61
Continental region	37	39
Total	95	100

Source: FINA, 2012-2016

Main financial indicators that were calculated to evaluate the financial performance of wineries are EBITDA, profit margin, profitability ratio (ROA) and an indicator of indebtedness, debt/assets ratio (D/A) (Box 1. equations).

Box 1. Financial analysis

EBITDA = Net income + Taxes + Interest rates + Amortization

Profit margin = Net income/Total revenue

Return on assets (ROA) = Net income /Total Assets

Debt – assets ratio (D/A) = Total Liabilities/Total Assets

For every winery, financial ratios were calculated, and the average ratio is shown according to the size and region. Depending on wineries data, the average calculated numbers show us the region's position and condition/situation.

EBITDA shows a negative value in Adriatic region in 2012 and 2015, compared to high and positive EBITDA in other years. Continental region had a positive EBITDA through all analyzed years. Higher EBITDA means that business has a better ability to meet its financial obligations.

On the other hand, the profit margin in both regions records high negative values, and in Continental region profit margin is recovering comparing with Adriatic region. Both regions have a negative return on asset (ROA), with a lower negative return on assets for the Adriatic region. It shows us that the Adriatic region is doing better but not sufficient, generating more profit on invested assets. It can be seen that in both regions in 2016 ROA is similar, about -0.25%.

Table 4: Financial ratios according to region

	Year	EBITDA (€)	Profit margin	ROA	D/A
ADRIATIC REGION	2012	-24,892	-30.91%	-1.57%	84.95%
	2013	44,810	-2.28%	-0.29%	96.31%
	2014	143,672	-19.65%	2.17%	86.22%
	2015	-17,871	-52.00%	-0.25%	80.89%
	2016	81,714	-58.02%	-0.24%	316.07%
	Mean	45,487	-32.57%	-0.04%	132.89%
	Year	EBITDA (€)	Profit margin	ROA	D/A
CONTINENTAL REGION	2012	69,830	-252.40%	-88.44%	102.30%
	2013	75,315	-34.92%	-18.37%	133.19%
	2014	18,161	-427.71%	-3.99%	140.68%
	2015	48,569	-32.37%	-8.61%	142.32%
	2016	51,578	-37.99%	-0.25%	134.13%
	Mean	52,690	-157.08%	-23.93%	130,52%

Source: authors according to FINA 2012-2016

Using One-Way ANOVA we can conclude that there is not a significant difference between Adriatic and Continental region.

Financial indicators of all companies are far below preferred level. High indebtedness and even negative equity are indicators of poor financial health and business sustainability.

2.2.1. Winery size financial analysis

Based on the availability of data wineries were divided according to size and divided into two groups, small and large wineries (Table 4). Because data about a number of employees were not available, wineries were divided according to total assets. It means that wineries with total assets to 2 million euros belong to small and more than 2 million euros assets in the group of large wineries. From 95 wineries, 78% of them are small wineries and 22% are large wineries.

Table 5: Wineries according to size

Size	Number of wineries	% of wineries
Small	74	78,32
Large	21	21,68
Total	95	100

Source: FINA, 2012-2016

According to analyzed data and shown financial ratio data we can conclude that large wineries have higher average EBITDA indicator with the mean value of 907,836 €, but with high dispersion. Profit margin is negative and highly dispersed in the both groups. Slightly better, although still negative return on assets at the large wineries is result of less variation. Small wineries record a significant increase of ROA ratio, from -45% to 0.77%. The high indebtedness of both winery sizes (debt/assets) shows that funding from external sources prevails, especially in small wineries (mean 142%; SD 0.86; CV 60%).

Table 6: Financial ratios according to winery size

Year	EBITDA		Profit margin		ROA		D/A	
	Small	Large	Small	Large	Small	Large	Small	Large
2012	99,466	58,797	-126.24%	-74.82%	-44.58%	-3.08%	89.63%	99.23%
2013	208,500	186,345	-25.20%	-5.99%	-7.85%	-2.45%	105.18%	105.35%
2014	165,753	2,836,323	-230.31%	-5.60%	-0.71%	1.57%	108.36%	105.07%
2015	199,312	-397,944	-44.34%	-44.45%	-3.73%	-2.78%	110.76%	86.43%
2016	173,483	1,855,661	-17.94%	-60.45%	0.77%	-2.75%	293.68%	92.98%
Mean	169,303	907,836	-88.81%	-38.26%	-11.22%	-1.90%	141.52%	97.81%
Standard Deviation	42,849	1,375,128	0.901	0.315	0.189	0.020	0.855	0.081
Coefficient of variation	25%	151%	-101%	-82%	-169%	-103%	60%	8%

Source: authors according to FINA 2012-2016

With One-Way ANOVA there is not a significant difference between the size wineries.

The correlation analysis did not confirm the causal connection between financial performance ratios (profit margin, ROA) and key items from financial statements. Performance ratios vary regardless of total assets, total sales, business expenses, and indebtedness level. In addition, variations are very large, suggesting that financial success depends on some other factors that are not involved in this research. Determining these factors should, therefore, be subject to a new study in which it is necessary to take into account the physical indicators of business as well as management and marketing practices in the wine producing enterprises.

3. Conclusion

Wine production in Croatia lags behind to leading EU wine producers. In the European Union, Croatia contributes with 0.4% to the total EU wine production and with 0.76% to total vineyards area. Although Croatia has a small share of total EU production, wine production is one of the strategic sectors in Croatian agriculture. Importance of wine sector is seen in generating agricultural income and additional job opportunities for the rural population, as well as for the growth of tourism and consequently the development of rural areas.

In Croatia, 1.5% of the total utilized agricultural areas are vineyards with grape growing in two different regions and with a self-sufficiency rate of 75.79%. The main characteristic is a negative import-export balance, but with achieved higher average export wine price for period 2006-2013.

Small family farms perform better than big wineries because of higher total output, gross margin, farm net value added and a higher current ratio comparing with other Croatian farms.

There is no significant difference between Adriatic and Continental region, and between sizes of wineries. The main differences are that the Continental region shows lower, but positive average equity, lower average total liabilities, and lower losses than the Adriatic region. By comparison of different sizes of wineries and region in which they operate, it can be concluded that large wineries are in better condition according to small wineries, and wineries in Continental region are in better shape than wineries in Adriatic region. The main reasons are higher EBITDA, and lower but insufficient debt/asset ratio.

According to used financial and statistical methods, it cannot be accepted or rejected the hypothesis defined at the beginning of the work. The reasons are that the business results of wineries show huge variability and heterogeneity in the analyzed period. The statistical relationship between business indicators hasn't observed. That fact disables use of business results in management decisions and policy-making. In the process of building competitive sector or company, a wider range of variables (market, socio-economic, consumer preferences...) should be taken into consideration and tested in the forthcoming period.

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