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FINANCIAL PERFORMANCE OF SMES WINERIES IN SLOVAKIA: DUPONT DECOMPOSITION ANALYSIS*

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Abstract. Winegrowing has a long tradition in Slovakia, from the point of view of grape cultivation and wine production. The country area is divided into 6 winegrowing regions, and most wine producers are in South Slovakia and Small Carpathian regions. Around 800 active wine producers are currently operating in Slovakia. Most of them are self-employed. In the paper, we dealt with micro and SME wineries and quantified DuPont decomposition in these wineries for a period of 2013 – 2022. To reach a profit or be profitable is the companies' primary goal. If the company is gaining a profit, it is profitable. In DuPont decomposition, the peak indicator is ROE, which points out how efficiently the company uses equity to reach a profit. This indicator is spread into several levels of decomposition to partial indicators such as ROA, financial leverage, ROS, asset turnover, etc. In all three types of wineries, the significant influence of the change in ROA and the influence of the change in financial leverage prevails. From the second level of decomposition, the influence of the change in ROS prevails over asset turnover. From the perspective of individual types of assets, the most significant impact is the share of non-current assets and equity. From the standpoint of individual sales, the most important influence is the share of sales from the products and assets.

Keywords: financial analysis; DuPont analysis; pyramid decomposition; ROE; SME; wineries

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JEL Classification: M21, M41, Q1

1. Introduction and Review of Literature

In many European countries, viticulture and winemaking are important sectors (Santos et al., 2020). In Slovakia, grape has been cultivated since Roman times. Natural settings limit vineyards' distribution predominantly to its southern parts, mainly to lowlands and foothills of the Carpathians (Slámová & Belčáková, 2020). Slovakia is divided into 6 winemaking regions: Small Carpathian, Central Slovak region, South Slovak region, East Slovak

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region, Tokaj and Nitra region. The Small Carpathian region is one of the oldest winemaking regions in the Slovak Republic. The South Slovak region is the warmest of winemaking regions in the country (Garett, 2022). Climate change significantly affects the viticulture sector (Santos et al., 2020; Arsian, Yuce & Berkay, 2024; Jones & Alves, 2012)

Small and medium-sized enterprises are important market sectors of the economy. They are the driving force of business, growth, innovation and competitiveness. They have a significant socio-economic and political role (Kubíčková & Peprný, 2011). Micro, small and medium-sized enterprises (MSMEs) represent 90 % of businesses and more than 50 % of employment worldwide (Morales Pedraza, 2021; Yahya, 2023). The development of SMEs in Slovakia accelerated after 2000. Now constitute more than 99 % of companies (Číhová & Nekolová, 2012; Popa & Ciobanu, 2014). Despite their importance, MSMEs face numerous challenges, including limited access to finance, inadequate digital literacy, and a lack of strategic business planning (Yahya, 2023; Umiyati & Zulfanetti, 2021).

Small and medium-sized enterprises often face unique challenges that can significantly impact their financial performance. The resource-based view highlights the importance of internal resources in achieving competitive advantage, which is crucial for wineries aiming to enhance their profitability (Alonso & Bressan, 2016). In their paper, the profitability and efficiency performance of different Hungarian wine regions were analysed by Szerb & Szerb (2020). They used DuPont scorecard system, which is preferred for planning and control purposes in companies. Wine regions have a significant impact on the economic performance of wineries. DuPont analysis can reveal how effectively wineries convert sales into profits, how efficiently they utilise assets to generate sales, and how much leverage they employ. These indicators are crucial for wineries (Bandieri, 2023; Alonso & Kok, 2018).

The company aims to make a profit. The profitability analysis is done to highlight business firms' current operating performance (Praveen Gujjar & Manjunatha, 2018). The DuPont business model is almost 100 years old. It provides a classic template for the decomposition that can be used to create integrated systems of performance metrics (Mitchell, Mitchell & Cai, 2013). DuPont analysis is named after the DuPont Corporation, which popularised the use of this indicator in 1919. The DuPont analysis is a helpful tool for assessing a firm's performance. Financial managers use ratios to benchmark their firm's performance against competitors and set future goals (Burns, Sale & Stephan, 2008). Unlike the traditional DuPont analysis, the modified Dupont analysis explicitly splits operating and financial performance (Rosa Soares & Caio Galdi, 2011). This analysis helps investors identify the company's financial strengths and the possibility of bankruptcy (Portia, 2021). It focuses on comparing accounting values in relative terms and lends itself naturally to compositional analysis (Saus-Sala et al., 2021).

DuPont analysis can be easily counted using basic firm data finding in profit and loss statements, balance sheets and cash flow statements (Mihola, Kotesovcova & Wawrosz, 2016). The analysis is based on company's return on equity (ROE), that is decomposed into three indicators: net profit margin, total asset turnover and the equity multiplier. The extended DuPont analysis multiplies ROE by the earnings retention rate to calculate sustainable growth (Gardner, McGowan & Moeller, 2011). ROE, ROA, and ROS are the most comprehensive measures of a company's profitability. Bhagyalakshmi & Saraswathi (2019) used correlation and regression analysis to know whether the relationship among the above variables exists or not and to know the impact of ROA and EM on ROE. Results show a positive relationship among all the variables except EM. The paper of authors Herciu et al. (2011) demonstrates that in most cases, the most profitable companies are not the most attractive to investors. By using DuPont analysis, they came to the results, that the ranking is not preserved when ratios as ROA, ROE, ROS are taken into consideration.

2. Material and Methods

From a total number of approximately 800 active wine producers, the majority of them are self-employed. We focused on the commercial companies – joint-stock companies, limited liability companies or agricultural cooperatives- that are engaged in the cultivation of grapes, production, and sale of wine and its products. Of the total number of monitored wineries, there are 108 micro wineries, 40 small wineries and 9 medium-sized wineries. The source of information was the register of financial statements and documents of financial statements such as the balance sheet and profit and loss statement of wineries. The monitored period was 2013 – 2022.

Pyramid systems of indicators have a significant position among individual systems of indicators, whether they are matrix or parallel. The peak (synthetic) indicator is decomposed through links on analytical indicators. Among the indicators is the sign of multiplication, which is a multiplicative bond, or the sign of addition, which is an additive bond. In the case of multiplicative link, the functional method was used to calculate the influence of individual analytical indicators on the change of the synthetic indicator. The pyramid decomposition was divided into individual levels:

I. Decomposition level: $ROE = \frac{EAT}{A} \cdot \frac{A}{E}$

$$\text{Valid: } A = \frac{\Delta \frac{EAT}{A}}{\frac{EAT}{A}_0} \quad B = \frac{\Delta \frac{A}{E}}{\frac{A}{E}_0}$$

$$\text{Absolute term (€): } ROE_{\frac{EAT}{A}} = A \cdot \frac{EAT_0}{E_0} \left(1 + \frac{B}{2}\right) \quad ROE_{\frac{A}{E}} = B \cdot \frac{EAT_0}{E_0} \left(1 + \frac{A}{2}\right)$$

$$\text{Relative term (%): } ROE_{\frac{EAT}{A}} = (ROE_{\frac{EAT}{A}} \cdot (\text{Index } ROE - 1) \cdot 100) : \Delta ROE$$

$$ROE_{\frac{A}{E}} = (ROE_{\frac{A}{E}} \cdot (\text{Index } ROE - 1) \cdot 100) : \Delta ROE$$

II. Decomposition level: $\frac{EAT}{A} = \frac{EAT}{S} \cdot \frac{S}{A}$

$$\text{Valid: } A = \frac{\Delta \frac{EAT}{S}}{\frac{EAT}{S}_0} \quad B = \frac{\Delta \frac{S}{A}}{\frac{S}{A}_0}$$

$$\text{Absolute term: } ROE_{\frac{EAT}{S}} = A \cdot \frac{EAT_0}{A_0} \left(1 + \frac{B}{2}\right) \quad ROE_{\frac{S}{A}} = B \cdot \frac{EAT_0}{A_0} \left(1 + \frac{A}{2}\right)$$

$$\text{Relative term: } ROE_{\frac{EAT}{S}} = (ROE_{\frac{EAT}{S}} \cdot ROE_{\frac{S}{A}} \cdot 100) : \Delta \frac{EAT}{A}$$

$$ROE_{\frac{S}{A}} = (ROE_{\frac{S}{A}} \cdot ROE_{\frac{EAT}{S}} \cdot 100) : \Delta \frac{EAT}{A}$$

$$\frac{A}{E} = \frac{NCA}{E} + \frac{CA}{E} + \frac{A/D}{E}$$

There is an additive link between the ratios of non-current assets and equity, current assets and equity and accruals on the asset side and equity, i.e., the procedure for calculating their impact on ROE will be as follows:

$$ROE_{\frac{NCA}{E}} = \frac{\Delta \frac{NCA}{E}}{\frac{NCA}{E}_0} \cdot \frac{EAT}{E} \quad ROE_{\frac{CA}{E}} = \frac{\Delta \frac{CA}{E}}{\frac{CA}{E}_0} \cdot \frac{EAT}{E} \quad ROE_{\frac{A/D}{E}} = \frac{\Delta \frac{A/D}{E}}{\frac{A/D}{E}_0} \cdot \frac{EAT}{E}$$

III. Decomposition level: $\frac{S}{A} = \frac{SoM}{A} + \frac{SoP}{A} + \frac{SoS}{A} + \frac{SoA.M}{A} + \frac{SoSS}{A}$

There is an additive link between the shares of each company's sales and total assets, so we used an additive link to calculate their impact on ROE, which is as follows:

$$ROE_{\frac{SoM}{A}} = \frac{\Delta \frac{SoM}{A}}{\Delta \frac{S}{A}} \cdot \frac{EAT}{E} \frac{S}{A}$$

$$ROE_{\frac{SoP}{A}} = \frac{\Delta \frac{SoP}{A}}{\Delta \frac{S}{A}} \cdot \frac{EAT}{E} \frac{S}{A}$$

$$ROE_{\frac{SoS}{A}} = \frac{\Delta \frac{SoS}{A}}{\Delta \frac{S}{A}} \cdot \frac{EAT}{E} \frac{S}{A}$$

$$ROE_{\frac{SoA.M}{A}} = \frac{\Delta \frac{SoA.M}{A}}{\Delta \frac{S}{A}} \cdot \frac{EAT}{E} \frac{S}{A}$$

$$ROE_{\frac{SoSS}{A}} = \frac{\Delta \frac{SoSS}{A}}{\Delta \frac{S}{A}} \cdot \frac{EAT}{E} \frac{S}{A}$$

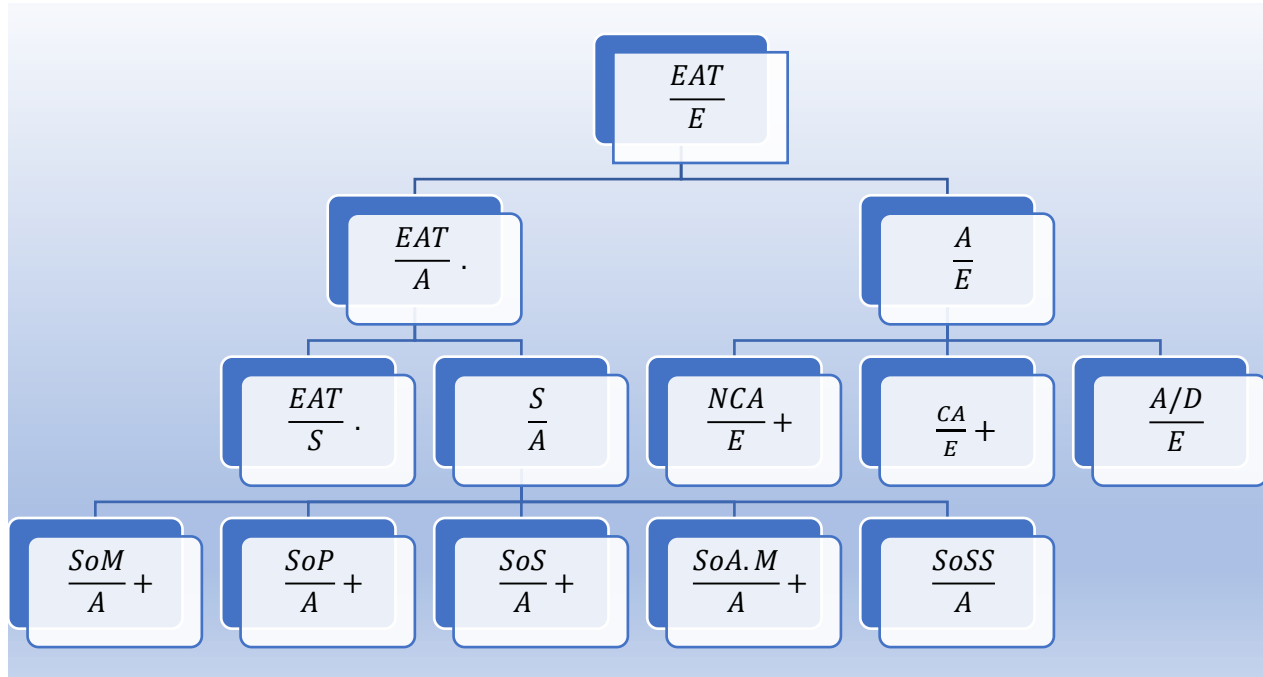


Figure 1. Pyramid decomposition of ROE

Source: own processing

Where: EAT – Earnings after taxes, E – Equity, A – Assets, S – Sales, NCA – Non-current assets, CA – current assets, A/D – Accruals/Deferrals, SoM – Sales of merchandise, SoP – Sales of own products, SoS – sales of services, SoA.M – Sales of non-current intangible assets, property plant and equipment, and raw materials, SoSS - Sales of securities and shares

3. Results

Winemaking and viticulture in Slovakia have a long tradition. Wine production is one of the most important agricultural activities worldwide (Maicas & Mateo, 2020). Enterprises operating in this sector are predominantly micro, small and medium-sized enterprises. During the pandemic period, they faced many problems, as the HoReCa segment (hotel and catering sector), where many wineries supply their products, was the most affected by the anti-pandemic measures and lockdowns. Many wineries that did not sell their products through shops, could not organise events in the form of e.g., wine tastings and wine tours, did not have enough temporary workers from abroad in the form of cheap labour, as the pandemic did not allow travel, etc., had to consider their further activities on the market, and this unfavourable situation was reflected in particular on their economic results of micro wineries, small wineries. The impact of external shocks, such as the COVID-19 pandemic, has underscored the vulnerability of wineries, particularly those that rely heavily on tourism for sales. COVID-19 pandemic forced many wineries to pivot quickly to online sales and e-commerce, showcasing their adaptability and revealing their business models' fragility (Strickland & Williams, 2022; Faria, 2023).

In terms of the evolution of key indicators such as EAT, sales and assets, we have depicted their evolution in micro, small and medium-sized wineries over the period under review in the following figures. Figure 2 shows the evolution of EAT in the different categories of wineries. In the micro wineries, costs exceeded revenues in almost all years, meaning these wineries reported a loss. The only exception was in 2016, when the set of micro-enterprises made an average profit of €2 537. During the COVID-19 pandemic in 2019, micro wineries experienced a loss, but it did not reach the level before the pandemic period in 2018. Small wineries reported a profit in 2014, 2018, 2021 and 2022. In both pandemic years 2019 and 2020, the set of small wineries reported a loss, which deepened in 2020 to -€49,329. Medium-sized wineries performed the best of the three types of enterprises, showing a profit in all the periods analysed. During the pandemic years and subsequently after, we see an increase in profit after tax.

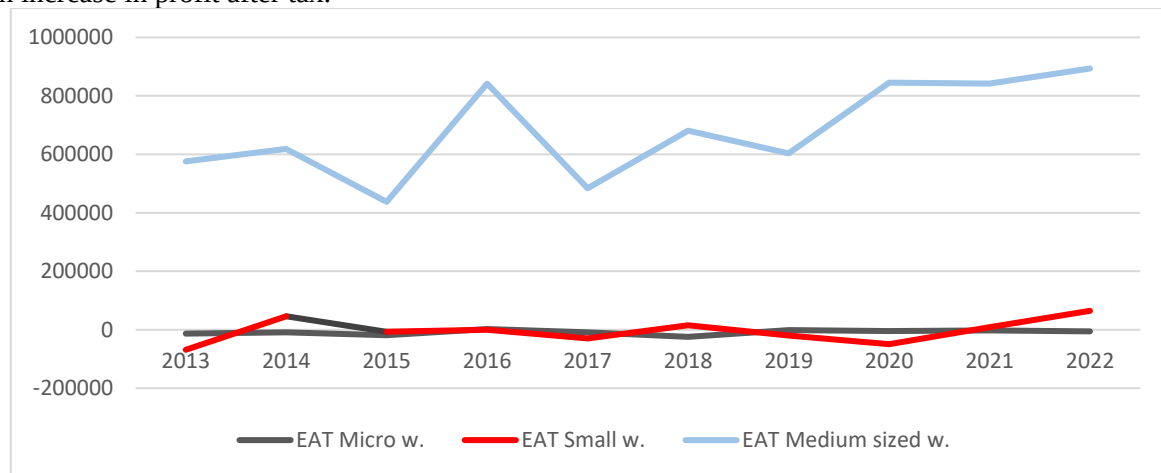


Figure 2. EAT development in € in micro, small and medium-sized wineries in Slovakia

Source: own processing

We have constructed a tree map based on the development of individual sales in wineries. As shown in Figure 3, the most represented in all three forms of wineries were sales revenues from own products, which reached an average value of 49% in micro wineries, 79.5% in small wineries and 86% in medium-sized wineries. The second highest share was in sales of goods, which averaged 37% in micro wineries and 6% in small and medium wineries. Revenue from the sale of services accounted for between 5 % and 10 % on average, and revenue from the sale of fixed assets and materials accounted for between 3 % and 7 %. Sales of securities had a slight representation of around 0.01% - 0.56%; since the enterprises are mainly oriented towards economic activity, it is logical that these sales, which are part of financial activity, will be at a very low level. Revenues are the most important item of income whether in micro, small or medium-sized wineries.

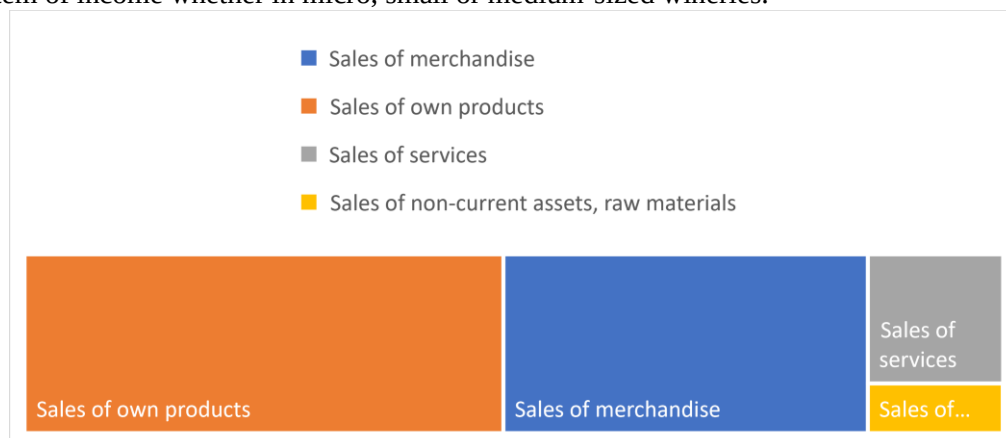


Figure 3. Sales in micro, small and medium-sized wineries in Slovakia

Source: own processing

The assets of wineries consist of both non-current assets and current assets and accruals. Based on the quantification of the average for the period 2013-2022, we can conclude that there is a prevalence of non-current assets, which are of a long-term nature in micro (59.82%) and small enterprises (63.81%). In medium-sized enterprises, current assets (50.26%) slightly prevail over non-current assets (49.53%). Accruals had a slight representation of around 0.21% - 0.44% in all three forms of wineries.

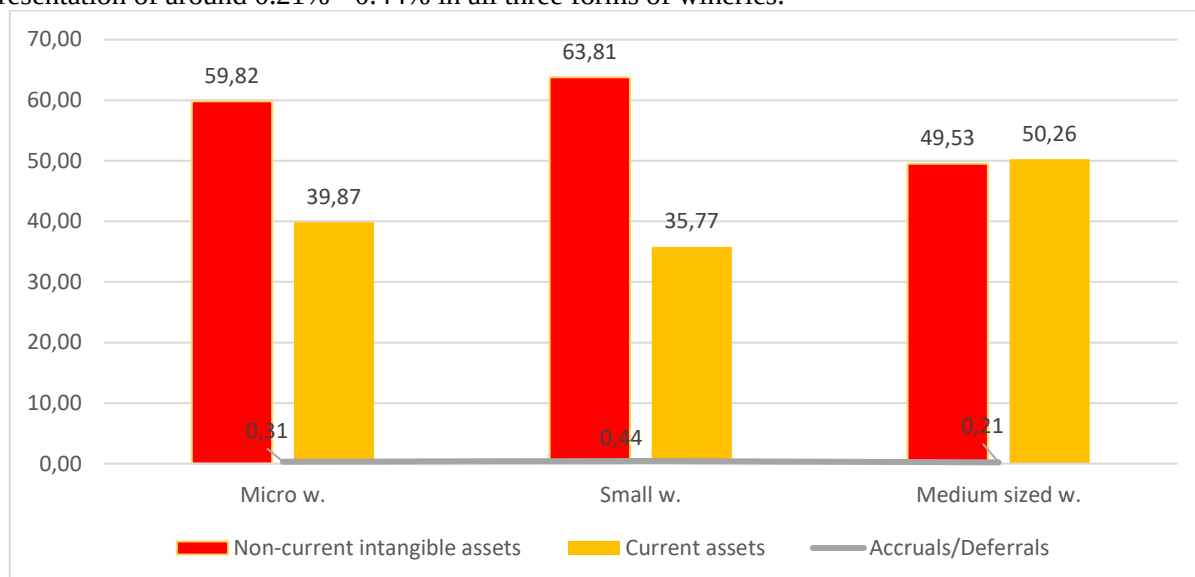


Figure 4. Average assets (%) in micro, small and medium-sized wineries in Slovakia

Source: own processing

By measuring the individual indicators, we constructed a DuPont decomposition using the functional method in the case of multiplicative linkage; its calculation in micro, small and medium enterprises is presented in the following tables. Micro wineries represent a good example of SMEs, being small realities serving the local markets and spaces that strengthen local communities (Cantafio & Parisi, 2021). The value of ROE developed at a fluctuating rate during the analysed period. We can see a decrease in the years 2015, 2017, 2018, 2020, 2022. In total, the value of ROE has decreased by 0.064 € or 162.194% over the period under review. This decrease in ROE was mainly caused by ROA. ROA is the ratio of earnings to assets. To achieve a certain level of ROA, companies with low-profit margins tend to have high asset turnover, while those with high profit margins have low asset turnover (Rakićević et al., 2016). As can be seen from Table 1, this ratio increased ROE in 2014, 2016, 2019, 2021, which can be evaluated positively in terms of profitability. The second indicator forming the first stage of decomposition is the ratio of assets to equity or financial leverage. The leverage ratio measures how much of total assets are financed by debt. Its value positively affected ROE in 2016, 2017, 2019, 2021. Overall, the value of the indicator grew by €0.024 or 3.711% over the period under review. This indicator is decomposed into the ratios of individual items of assets to equity. The influence of the share of non-current assets in equity is predominant, influencing the ROE value most significantly among the three assets. The profit margin or return on sales, given by the ratio of EAT to sales, and the asset turnover, formed by the ratio of sales to assets, represent the second level of decomposition. These two accounting ratios measure different constructs and have different properties. Prior research has found that a change in asset turnover is positively related to future changes in earnings (Soliman, 2008). The return of sales and asset turnover are the basic drivers of economic rentability. The research results show that return on sales is a key driver of wineries' economic rentability (Borisov & Radev, 2020). Overall, the indicator expresses how many euros of EAT are produced by one euro of total sales. In terms of quantifying the impact on ROE, the EAT/sales ratio has a more significant impact than asset turnover. The net profit margin (net profit margin) reduced ROE in 2015, 2017, 2018, 2020 and 2022. Asset turnover expresses how much revenue one euro of assets generates for us. It is true that the more efficiently a company uses its assets, the more revenue and profit it generates, assuming a positive return on sales (Zednicek, 2023). Asset turnover reduced ROE in 2017, 2020 and 2022, positively impacting ROE in

other years. The indicator had the most significant negative impact on ROE in 2020, when it reduced ROE by €0.002 or 34.386%, indicating a decrease in sales in this period. The third level of decomposition is formed by the ratio of individual sales to assets. The effect of the share of sales of own products on ROE among the individual shares of sales on assets is predominant.

Table 1. DuPont decomposition in micro wineries

Indicator/year	2014	2015	2016	2017	2018	2019	2020	2021	2022	22-14
Δ ROE €	0.049	-0.165	0.294	-0.067	-0.092	0.134	-0.018	0.012	-0.015	-0.064
Δ ROE %	30.614	-149.946	107.066	-345.980	-193.094	96.013	-328.903	51.379	-131.580	-162.194
Δ EAT/A €	0.074	-0.127	0.243	-0.074	-0.082	0.128	-0.016	0.011	-0.014	-0.088
Δ EAT/A %	46.502	-115.013	88.551	-380.737	-171.373	91.040	-287.849	47.620	-119.403	-165.905
Δ A/E €	-0.025	-0.038	0.051	0.007	-0.010	0.007	-0.002	0.001	-0.001	0.024
Δ A/E %	-15.888	-34.933	18.516	34.757	-21.720	4.974	-41.054	3.758	-12.177	3.711
Δ NCA/E €	-0.015	-0.022	0.031	0.004	-0.007	0.004	-0.001	0.001	-0.001	0.014
Δ NCA/E %	-9.460	-20.452	11.237	22.035	-13.829	3.119	-24.715	2.159	-6.940	2.520
Δ CA/E €	-0.010	-0.016	0.020	0.002	-0.004	0.003	-0.001	0.000	-0.001	0.010
Δ CA/E %	-6.399	-14.342	7.227	12.676	-7.850	1.845	-16.308	1.588	-5.166	1.232
Δ (A/D)/E €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ (A/D)/E %	-0.029	-0.139	0.065	0.046	-0.042	0.010	-0.050	0.011	-0.071	-0.042
Δ EAT/S €	0.059	-0.130	0.239	-0.073	-0.089	0.122	-0.014	0.009	-0.013	-0.071
Δ EAT/S %	36.970	-118.149	86.954	-375.896	-186.727	86.809	-253.463	38.847	-108.175	-145.145
Δ S/A €	0.015	0.003	0.004	-0.001	0.007	0.006	-0.002	0.002	-0.001	-0.016
Δ S/A %	9.532	3.136	1.596	-4.841	15.354	4.231	-34.386	8.774	-11.228	-20.760
Δ SoM/A €	0.004	0.001	0.001	0.000	0.003	0.002	-0.001	0.001	-0.001	-0.005
Δ SoM/A %	2.492	0.870	0.489	-1.952	6.933	1.625	-11.023	4.309	-4.895	-7.387
Δ SoP/A €	0.010	0.002	0.002	0.000	0.003	0.003	-0.001	0.001	-0.001	-0.010
Δ SoP/A %	6.210	1.676	0.866	-2.136	6.380	2.084	-19.267	2.536	-5.250	-11.460
Δ SoS/A €	0.001	0.000	0.001	0.000	0.001	0.001	0.000	0.000	0.000	-0.001
Δ SoS/A %	0.560	0.415	0.195	-0.512	1.570	0.416	-3.246	1.240	-0.766	-1.326
Δ SoA.M/A €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ SoA.M/A %	0.270	0.174	0.046	-0.241	0.470	0.101	-0.850	0.689	-0.317	-0.587
Δ SoSS/A €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ SoSS/A %	0.000	0.000	0.000	0.000	0.000	0.005	0.000	0.000	0.000	0.000

Source: own processing, financial statements of wineries

Table 2 shows the DuPont decomposition in small wineries. Small wineries represent an activity which is currently being developed, and it is expected that it will, as is the case in developed countries, contribute to economic development and employment (Lekić et al., 2018). ROE reached negative values in 2015, 2017, 2019, 2020.

The most significant decrease was recorded in 2017, when ROE decreased by 0.012 € or 5 116.098%. This is due to a significant widening of the loss in 2017 compared to 2016 in the set of small wineries. In the first stage of the decomposition, ROA had a more pronounced impact on ROE, reducing the value of ROE in the years mentioned above. The most significant decrease in ROE was caused by ROA in 2017.

The ratio of assets to equity had less impact on ROE than ROA. Except for 2017 and 2018, it reduced ROE in every year analysed. In terms of the share of individual assets in equity, the share of non-current assets in equity had the most significant impact on ROE. As mentioned above in the commentary, the most significant decrease in ROE was caused by ROS in 2017, when it decreased ROE by €0.013 or 5,417%; the impact of the share of individual sales on assets on ROE is tracked in the tables below. Among the individual revenues, the impact of revenues from product sales on ROE is the most significant.

Table 2. DuPont decomposition in small-sized wineries

Indicator/year	2014	2015	2016	2017	2018	2019	2020	2021	2022	22-14
Δ ROE €	0.058	-0.026	0.003	-0.012	0.019	-0.015	-0.013	0.026	0.025	-0.033
Δ ROE %	164.412	-115.049	92.881	-5116.098	149.587	-234.118	-160.810	118.255	621.040	456.629
Δ EAT/A €	0.058	-0.026	0.003	-0.013	0.019	-0.015	-0.013	0.026	0.025	-0.033
Δ EAT/A %	164.706	-114.610	97.806	-5186.777	148.921	-233.718	-160.540	118.389	624.415	459.708
Δ A/E €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ A/E %	-0.295	-0.439	-4.925	70.679	0.666	-0.400	-0.270	-0.133	-3.374	-3.079
Δ NCA/E €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ NCA/E %	-0.200	-0.286	-3.240	46.965	0.410	-0.249	-0.167	-0.084	-2.117	-1.917
Δ CA/E €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ CA/E %	-0.093	-0.151	-1.670	23.609	0.254	-0.149	-0.102	-0.049	-1.244	-1.151
Δ (A/D)/E €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ (A/D)/E %	-0.002	-0.002	-0.015	0.178	0.002	-0.002	-0.002	0.000	-0.014	-0.012
Δ EAT/S €	0.058	-0.025	0.003	-0.013	0.019	-0.015	-0.012	0.026	0.022	-0.036
Δ EAT/S %	165.580	-112.635	95.906	-5416.555	149.848	-234.058	-140.662	116.625	559.124	393.544
Δ S/A €	0.000	0.000	0.000	0.001	0.000	0.000	-0.002	0.000	0.003	0.003
Δ S/A %	-0.874	-1.975	1.900	229.778	-0.927	0.340	-19.878	1.763	65.291	66.164
Δ SoM/A €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ SoM/A %	-0.054	-0.112	0.099	13.458	-0.058	0.025	-1.076	0.103	4.114	4.168
Δ SoP/A €	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	0.000	0.002	0.003
Δ SoP/A %	-0.756	-1.719	1.635	187.400	-0.797	0.289	-17.574	1.542	56.268	57.025
Δ SoS/A €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ SoS/A %	-0.043	-0.109	0.107	1.923	-0.050	0.017	-0.661	0.066	2.944	2.987
Δ SoA.M/A €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ SoA.M/A %	-0.019	-0.035	0.060	15.971	-0.021	0.009	-0.566	0.053	1.965	1.985
Δ SoSS/A €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ SoSS/A %	0.000	-0.001	0.000	0.026	0.000	0.000	0.000	0.000	0.000	0.000

Source: own processing, financial statements of wineries

Table 3 shows the calculation of DuPont decomposition in medium-sized wineries. ROE increased its value in 2014, 2016, 2018 and 2020. The most significant increase was in 2016, when there was €0.046 of EAT per euro of equity in the set of medium-sized wineries. Over the period under review, we record a decrease in the ROE ratio of €0.006 or 6.944%.

Successful farm business managers must understand the determinants of profitability and have an overall long-term or strategic management focus (Melvin et al., 2004).

From the first level of decomposition, the development of ROE was mainly influenced by the ROA indicator, which increased the value of ROE in 2014, 2016, 2018, 2020 and 2022. In 2016, by changing the ROA indicator, ROE increased most significantly by € 0.047 or 89.263 %. Despite the positive effect of ROA on ROE in 2022, the value of ROE decreased, mainly due to the influence of A/E, which decreased the value of ROE by € 0.007 or 6.787 %.

In terms of the impact of individual asset equity ratios, the ROE was influenced by the share of non-current and current assets in equity to approximately the same extent. The equity shares of all three assets increased ROE in only two years, namely in 2017 and 2018. These two years also increased the A/E ROE by €0.005 and 5.072% in 2017 and €0.008 and 12.344% in 2018, respectively.

Table 3. DuPont decomposition in medium-sized wineries

Indicator/year	2014	2015	2016	2017	2018	2019	2020	2021	2022	22-14
Δ ROE €	0.002	-0.028	0.046	-0.034	0.027	-0.013	0.025	-0.006	-0.004	-0.006
Δ ROE %	2.751	-34.493	88.872	-34.065	40.848	-13.870	31.394	-5.453	-4.193	-6.944
Δ EAT/A €	0.005	-0.025	0.047	-0.039	0.019	-0.009	0.030	-0.005	0.003	-0.002
Δ EAT/A %	6.483	-30.886	89.263	-39.137	28.504	-10.350	38.490	-4.912	2.594	-3.890
Δ A/E €	-0.003	-0.003	0.000	0.005	0.008	-0.003	-0.006	-0.001	-0.007	-0.004
Δ A/E %	-3.732	-3.607	-0.391	5.072	12.344	-3.520	-7.096	-0.541	-6.787	-3.054
Δ NCA/E €	-0.001	-0.001	0.000	0.002	0.004	-0.002	-0.003	0.000	-0.003	-0.002
Δ NCA/E %	-1.834	-1.798	-0.187	2.314	6.118	-1.709	-3.654	-0.275	-3.498	-1.664
Δ CA/E €	-0.001	-0.001	0.000	0.003	0.004	-0.002	-0.003	0.000	-0.003	-0.002
Δ CA/E %	-1.890	-1.804	-0.203	2.747	6.190	-1.797	-3.431	-0.265	-3.282	-1.392
Δ (A/D)/E €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ (A/D)/E %	-0.008	-0.005	-0.001	0.012	0.036	-0.014	-0.011	-0.001	-0.006	0.002
Δ EAT/S €	0.006	-0.020	0.047	-0.049	0.027	-0.011	0.032	-0.005	-0.004	-0.010
Δ EAT/S %	7.201	-25.204	89.810	-49.294	41.688	-12.074	40.049	-5.227	-4.329	-11.530
Δ S/A €	-0.001	-0.005	0.000	0.010	-0.009	0.002	-0.001	0.000	0.007	0.007
Δ S/A %	-0.717	-5.682	-0.547	10.157	-13.184	1.724	-1.559	0.314	6.923	7.640
Δ SoM/A €	0.000	0.000	0.000	0.001	-0.001	0.000	0.000	0.000	0.000	0.000
Δ SoM/A %	-0.045	-0.323	-0.028	0.595	-0.822	0.126	-0.084	0.018	0.436	0.481
Δ SoP/A €	0.000	-0.004	0.000	0.008	-0.007	0.001	-0.001	0.000	0.006	0.006
Δ SoP/A %	-0.621	-4.944	-0.470	8.284	-11.344	1.466	-1.379	0.275	5.966	6.587
Δ SoS/A €	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Δ SoS/A %	-0.035	-0.313	-0.031	0.571	-0.716	0.086	-0.052	0.012	0.312	0.348
Δ SoA.M/A €	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Δ SoA.M/A %	-0.016	-0.100	-0.017	0.706	-0.303	0.046	-0.044	0.009	0.208	0.054
Δ SoSS/A €	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Δ SoSS/A %	0.000	-0.002	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000

Source: own processing

From the second level of decomposition by comparing the development of the indicator's profitability of sales and the share of assets in sales, the more significant impact on ROE was the indicator profitability of sales, which increased ROE in four years of the analysed period, namely in 2014, 2016, 2018, 2020. In 2016, due to the change in return on sales, the ROE ratio changed by €0.047 or 89.81%. Based on the development of the share of individual sales on total assets, the share of sales of own products on assets on ROE had the most significant impact on ROE. This ratio increased ROE in 2017, 2019, 2021 and 2022. On the contrary, the most significant decrease in ROE due to the impact of this ratio was in 2018, when ROE decreased by €0.0007 or 11.344%.

Conclusions

DuPont analysis serves as a valuable tool for wineries to assess their financial performance comprehensively. By examining the interplay of profitability, leverage, and efficiency, wineries can identify weaknesses and strengths in their operations and strategic positioning. DuPont decomposition of ROE was quantified in a selected set of micro, small and medium-sized enterprises. Micro, small and medium-sized wineries play a crucial role in the global wine industry. DuPont decomposition helps to determine the effects of various indicators on the peak ROE. ROE is mainly influenced by the evolution of profit and equity. EAT in each year of the analysed set was achieved only by medium-sized wineries. In terms of assets and their items, the representation of non-current assets in micro and small wineries and current assets is predominant. In medium-sized wineries, current assets and non-current assets predominate. The different revenue items are represented in each group of wineries, but overall, we can say that revenue from the sale of own products is predominant. In micro and medium wineries, this is followed by sales of goods and sales of services. In small wineries, sales of services and sales of non-current assets and goods are more likely to be represented. Sales are the most important revenue item and have a significant impact on profit. In micro wineries, the lowest decrease in ROE

was recorded in 2017, when ROE decreased by €0.067 or 346%. This decrease mainly affected ROA and ROS. The same trend was observed in the group of small wineries, where in 2017 we quantified the lowest decrease in ROE of €0.012 and 5,116%, respectively, caused by ROA and ROS. In the group of medium-sized enterprises, the lowest decrease in ROE was quantified in 2015, when ROE decreased by 0.028 € and 34.493%, respectively; this decrease was caused by ROA and ROS as in the previous enterprises. Slovak wineries produce quality products. Profitability can be achieved through various strategies ranging from effective cost management (energy efficiency - e.g., renewable energy sources, optimisation of logistics by reducing storage and distribution costs). Environmental proactivity is a factor influencing winery performance. Research by authors Junguera & Barba-Sánchez (2018) indicates that wineries that adopt sustainable practices improve their competitive advantages and enhance their long-term financial performance. The highest percentage of variable costs are packaging costs. Full-time labour, cooperage, and purchasing of grapes are the next highest operating costs. Depreciation of capital assets makes up the highest percentage of fixed costs (Fickle et al., 2005). Furthermore, by improving production and quality of the products produced (modernisation of equipment for more efficient production, cultivation of varieties with higher yields, obtaining certificates such as BIP, PDO - protected designations of origin guarantee that the wine has been produced in a certain wine region in accordance with specific and officially regulated quality criteria (Moreno Gené, Solé Puiggené & Galizzo Larraz, 2024), which will make the products produced more attractive, production-oriented to limited series, organisation of tastings, wine parties for customers, the development of agrotourism, advertising to increase the visibility of winemaking, participation not only in domestic but also international wine fairs. Constant monitoring of the market and competition is an important strategy for every company.

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