Analysis of financial performance determinants: evidence from the european agricultural companies

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Abstract

The aim of this research is to analyze the key factors that have an impact on the company's financial performance during seven-years period (2013-2019). The sample consists of 460 large and very large European agricultural companies engaged in plant cultivation. Taking into account the natural and technological potentials of plant production on the European market and its importance for sustainable economic growth, multiple regression model is used in order to research the financial performance of agricultural companies. The presented results pointed out that there are six variables (company's size, asset tangibility, current liquidity, short-term financing, long-term financing, debt to asset) that have a statistically significant impact on financial performance. The identification of these factors provides useful guidelines on how to improve company's financial performance in order to provide quality and competitiveness of plant production in the European and also world market. Competitive crop

and vegetable production would provide the necessary preconditions for a competitive food industry that should ensure continuous industrial and investment growth, satisfactory rate of merchandise exports, growth of business efficiency and employment growth on the European market.

Keywords: Financial performance. Agriculture

1. Introduction

Performance is a significant concept in modern business environment influenced by globalization, rapid changes and competitive struggle. It is a key point of consideration by management since performance is about the achievements of an individual or group, which are related to the authority or responsibility towards achieving the company goals. Performance represents the ability of a company to manage its resources in different directions in order to develop a competitive advantage. High performance indicates efficient use and management of the company's resources. The company's performance can be viewed through several dimensions. While on the one hand, productivity is important, i.e the ability to efficiently convert inputs into outputs, on the other hand, profitability is important, i.e the ability of the engaged funds to result in a return. Finally, the market premium should not be omitted, i.e the level at which the market value of the company is higher concerning its book value. Performance evaluation criteria are conditioned by the type of company that is the subject of evaluation and the goals to be achieved by evaluation (Almajali et al, 2012). It also can be influenced by the way the company is viewed by different stakeholders. There are two basic types of performance, financial and non-financial. Financial performance is based on variables derived from financial statements.

Agricultural companies engaged in plant production are a very important sector of the economy that creates the necessary assumption for the development of food production. The food industry is one of the key factors that create the conditions for the agricultural production usage on domestic and foreign markets (Blažková & Dvoulety, 2018). The cultivation of annual and biennial plants requires large investments, the use of the latest technology and human labor in order to achieve high and stable yields. The financial results of most companies on European market have been positive for years, so they have the potential to significantly increase sales, exports and employment. Taking into account the costs, efficiency and quality of production, cultivation of annual and biennial plants is a promising and attractive industry whose companies are very often subject to privatization in order to

ensure integration into the modern market economy and world economic flows. A successful plant industry at the country level would have positive impact on the accumulation of capital, technical and technological growth and development and advancing innovation.

Despite the maximum operating engagement and high degree of productivity, companies in this industry often have a very high indebtedness rate, i.e loans with extremely high-interest rates and other unfavorable credit conditions. On that basis, these companies are often illiquid, and as a consequence of long-term illiquidity, they can become insolvent. Taking into account the importance of financial health of crop and vegetable industry companies, the primary aim of the research is to provide a concise analytical framework for the financial performance of companies in European countries. In that way, the research would analyze the effect of key determinants of company's financial performance that are an important prerequisite for sustainable economic growth.

Several previous research has been analyzed the factors that have an impact on financial performance. It was researched in the studies of Papadogonas (2007), Serrasqueiro & Nunes (2008), Almajali et al (2012), Hatem (2014), Pantea et al (2014), Khidmat & Rehman (2014), Vintila & Nenu (2015), Durrah et al (2016), Lazar (2016), Vieira et al, (2019). To the author's knowledge, the financial performance of agricultural companies engaged in plant production in European countries has not been thoroughly studied and therein lie the key motives of this research. Only Durrah et al (2016) explore the indicators of financial performance of food industrial companies listed in Amman Bursa. On the other hand, Hatem (2014) analyzed some companies from European market, but in the field of manufacturing, construction and other services and professionals activities. Bearing in mind scarce and insufficient research, it is necessary to develop a model that indicated the factors of improving the financial performance of European companies in the plant production. The research aim is to provide answers to the following questions:

- Which factors influence the financial performance of agricultural companies engaged in the cultivation of annual and biennial plants of European countries?
- What is the nature of the relationship between identified factors and financial performance of the agricultural companies engaged in the cultivation of annual and biennial plants of the European countries?

So, the paper has presented how financial performance can be improved bearing in mind that improved financial performance leads to greater agricultural company vitality. Determinants were selected on the basis of previously reliable empirical studies of the factors that have an impact on financial performance. The research was conducted based on disclosed

data in the financial statements of agricultural companies engaged in plant production in a TP Catalyst database which provides information about more than 360 million companies in all world countries (Bureau van Dijk, A Moody's Analytics Company, 2019). The sample included 460 large and very large European companies in the time period 2013-2019. Multiple regression model was used for assessing the factors affecting financial performance. The contribution of this research is reflected in a more thorough understanding of financial performance and ways to improve it. The analysis of performance determinants of European agricultural companies engaged in the cultivation of annual and biennial plants companies shows how they improve or worsen and thus represents a significant information basis for management, investors and policy makers. In this way, they provide the necessary guidance for policy makers to improve company performance using company-specific factors. The findings also contribute to the managers of agricultural companies in future decision-making regarding competitive position and the use of available resources. The efficiency of agricultural company management is reflected in their ability to recognize those determinants. This research also forms the basis and adds value for further research in this field.

The structure of the paper is as follows. After Introduction, Theoretical Background was presented the research goals. It is followed by Data and Methodology that contains the sample and applied methodology. The Results and Discussion with obtained results was followed by Conclusion which consists of guidelines and limitations for future research.

2. Theoretical Background and Empirical Evidence Review

Return on assets (ROA), as an accounting based measure of financial performance, was used in this study as dependent variable. As a measure of economic nature, ROA is allowing an assessment of the quality of management (Vieira et al, 2019). As an indicator of profitability, ROA represents the after-tax return relative to the total assets (Kim & Gu, 2006; Vuković et al, 2020a). ROA, as an indicator of profitability, helps to highlight a firm's ability to generate how many units of profit a firm earns per unit of total assets, and higher ROA indicators are characteristic of successful companies. Comparatively speaking, it is widely accepted viewpoint that the ROA is a better (more precise and unbiased) measure of profitability than Return on Equity (ROE) (Vojinović et al, 2020).

Most of the independent variables were selected because they were intensively used in similar previous research: Short-term debt to Total Assets (STD), Long-term debt to Total Assets (LTD), Debt to Asset (TDA) or Financial Leverage, Debt to Equity (TDE) or

Leverage, Size, Net Fixed Assets to Total Assets (Asset Tangibility), and Current Assets to Current Liabilities or Current ratio as a measure of Current Liquidity.

Empirical studies have analysed the correlation between STD and firm performance measured by ROA. The ***negative*** correlation was found in research realised by Akomeah et al. (2018), Alawwad (2013), Al-Taani (2013), Bortych (2017 – in public firms), Gansuwan & Önel (2012), Hasan et al. (2014), Musiega (2013), Quang & Xin (2014), Ramadan (2013), Salim & Yadav (2012), Vătavu (2015). In contrast, a few studies have shown ***positive*** relation between STD and ROA. The positive coefficient indicates that as more current liabilities were utilised to finance assets performance as measured by ROA improved (Mwangi et al, 2014). A positive relation is proven by research conducted by Amin & Jamil (2015), Bortych (2017 – in private firms), and Mwangi et al. (2014).

Similar to STD, LTD ratio has also shown ***negative*** correlation with ROA. This relationship can be found in research conducted by Abor (2007), Admassu (2016), Alawwad (2013), Al-Taani (2013), Amin & Jamil (2015), Bortych (2017-in private firms), Chandrasiri et al. (2016), Gansuwan & Önel (2012), Hasan et al. (2014), Musiega (2013), Olokoyo (2013), Salim & Yadav (2012), Saputra et al. (2015). The results of the public firms in the Netherlands mainly confirm the hypothesis that LTD influences public firms ***positively*** (Bortych, 2017), same as the results of listed trading companies in Sri Lanka (Nirajini & Priya, 2013).

Similar to all debt levels, TDA also ***negatively*** influences ROA. When a firms' debt level increases, its ROA is expected to decline because the excessive use of the leverage might impose high interest costs. The results that implies above mentioned can be found at Abor (2007), Ahmad et al. (2012), Alawwad (2013), Bui (2017), Dieu et al. (2019), Gansuwan & Önel (2012), Hasan et al. (2014), Lazar (2016), Musiega (2013), Olokoyo (2013), Papadogonas (2007), Ramadan (2013), Salim & Yadav (2012), Saputra et al. (2015), Serrasqueiro & Nunes (2008), Vătavu (2015), Vieira et al. (2019), Vintilă & Nenu (2015), and Zeitun & Tian (2007). Contrary to these results, ***positive*** relation between TDA and ROA found Nirajini & Priya (2013) in listed trading companies in Sri Lanka.

The leverage (TDE) has negative and positive relationship to the ROA. A ***negative*** impact on the profitability is confirmed in studies done by Chandrasiri et al. (2016), Khidmat & Rehman (2014), Nasimi (2016), Nirajini & Priya (2013), Saputra et al. (2015), and Zeitun & Tian (2007). But, some authors found a ***positive*** impact of leverage on ROA, such as Almajali et al. (2012), Al-Taani (2013), Azeez et al. (2015), Bortych (2017), and Younus et al. (2014).

The size can also positively or negatively influence firm performance. The size had a ***positive*** impact on ROA in research conducted by Vojinović et al. (2020), Ahmad et al. (2012), Alawwad (2013), Almajali et al. (2012), Alrabba (2019), Amin & Jamil (2015), Chadha & Sharma (2015), Quang & Xin (2014), Salim & Yadav (2012), Saputra et al. (2015 – banking and insurance subsector), Serrasqueiro & Nunes (2008), and Zeitun & Tian (2007). The previous results suggest that large size firms add more return to their assets and also leads to favourable growth opportunities, which will positively affect firm performance. The significance of firm size indicates that large firms earn higher returns compared to smaller firms, presumably as a result of diversification of investment and economies of scale (Zeitun & Tian, 2007). However, some authors consider that size has a ***negative*** relation with ROA, arguing that smaller firms generally have a greater level of risk, and investors are compensated with higher returns. Negative relationship found Vuković et al. (2020b), Hasan et al. (2014), Lazar (2016), and Saputra et al. (2015) in funding companies subsector.

The asset tangibility has ***negative*** correlation with the ROA, which depicts less return because of high debt cost (Chadha & Sharma, 2015). According to Lazar (2016), the frequent revaluations of buildings and land cause an increase in tangible assets without any subsequent increase in profits. Moreover, in order to get real-estate tax reductions, companies were enticed to constantly revaluate their buildings, which lead to an increase in tangibles without any corresponding real economic performance. That companies are more profitable when they invest less in tangible assets also found Vuković et al. (2020b), Manawaduge et al. (2011), Quang & Xin (2014), Singh & Bagga (2019), and Vintilă & Nenu (2015). However, asset tangibility influences in a ***positive*** manner a performance ROA of Romanian industrial companies listed at the Bucharest Stock Exchange (Pantea et al, 2014).

The higher liquidity ratio implies lower profitability, meaning that companies must optimize between the liquid asset and short-term liabilities. Vojinović et al. (2020) have proved the expected liquidity-profitability trade-off implying that managers should reconcile conflicting preferences over strong liquidity buffers on one hand, and satisfiable profitability levels on the other hand. This ***negative*** relationship between liquidity and ROA also found Chinaemerem & Anthony (2012), and Vieira et al. (2019). The ***positive*** relationship between liquidity and ROA can be explained that the increase in the return on assets is reflected positively on the current assets in general and on the net working capital in particular (Durrah et al, 2016). Khidmat & Rehman (2014) concluded that if current ratio is high it means that company is in good position, because company is cash enrich and easily handle the cash

troubles. The liquidity also positively affects company's performance in research conducted by Vuković et al. (2020b), Almajali et al. (2012).

In summary, and based on the above mentioned empirical evidence review, we can determine the following: ROA = f (STD, LTD, TDA, TDE, Size, Tangibility, Liquidity).

3. Data and Methodology

Multiple regression model was used in this research in order to test the determinants that have impact on the financial performance. The area of research are companies whose primary activity is cultivation of annual and biennial plants. The sample is structured solely by activity code (01). The research covers all active large and very large companies or 460 companies operating in seven years period in all European countries. The research was conducted based on available data in financial statements, i.e. balance sheets and income statements in TP Catalyst database (Bureau van Dijk, A Moody's Analytics Company, 2019). The statistical program Stata 13 was used in order to process data and develop the model. Analysis of key financial performance determinants of agricultural companies relied on Return on Assets (ROA) as dependent variable. Short-term Debt to Total Assets, Long-term Debt to Total Assets, Debt to Asset, Debt to Equity, Size, Asset tangibility, Current ratio were observed as independent variables. Observed independent variables are the most frequently used financial indicators in the literature for measurement and testing the financial performance of companies.

Table 1 presents the research conducted by Ebaid (2009), Salim & Yadav (2012), Alawwad (2013), Musiega (2013), Ramadan (2013), Hasan et al (2014), Quang & Xin (2014), Twairesh (2014), Amin & Jamil (2015), Chadha & Sharma (2015), Saputra et al (2015), Azeez et al (2015), Vătavu (2015), Admassu (2016), Bortych (2017), Bui (2017), Alrabba et al (2019) with all indicators and the method of calculation used in the paper.

Table 1: Determinants that may impact profitability

Indicators	Method of calculation
Profitability (ROA)	ROA- Net income/Total Assets
Short-term Debt to Total Assets (STD)	Short-term Debt/Total Assets
Long-term Debt to Total Assets (LTD)	Long-term Debt/Total Assets
Debt to Asset (TDA)	Debt/Asset
Debt to Equity (TDE)	Debt/Equity
Size	Log of Total Assets
Asset tangibility	Net fixed Assets/Total Assets

Current ratio	Current Assets/Current Liabilities

Source: Author's illustration

4. Empirical Results and Discussion

There are empirical analysis of selected variables that consists of descriptive statistics, correlation matrix and multiple regression. There were 3220 initial observations. After elimination of missing or abnormal values, the final model consisted of 2831 observations. In order to identify the key determinants and their impact on the financial performance of agricultural company, the following multiple regression model was set:

$$ROA_{it} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon_i$$

ROA_{it} – dependent variable;

β_0 – model constant;

β_i – coefficiency of independent variables;

X_1 - Short-term Debt to Total Assets (independent variable)

X_2 - Long-term Debt to Total Assets (independent variable)

X_3 - Debt to Asset (independent variable)

X_4 – Debt to Equity (independent variable)

X_5 – Size (independent variable)

X_6 - Asset tangibility (independent variable)

X_7 – Current ratio (independent variable);

E – error with a normal distribution;

i – signify each company (i=1,….., N);

t – signify the period of time (t=1,…., t).

Table 2: Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
ROA	2831	-534.4397	388.9340	7.272603	22.6903635
Short-term Debt to Total Assets	2831	0.0000	15.6579	0.260109	0.6461641
Long-term Debt to Total Assets	2831	0.0000	3.4736	0.164763	0.2807286
Debt to Asset	2831	0.0000	27.1009	0.564011	1.0428574
Debt to Equity	2831	-588.5064	8240.2691	15.295603	245.5031864
Size	2831	-1.5305	13.8191	9.403380	1.3160536
Asset tangibility	2831	0.0000	1.0000	0.442468	0.2274203
Current ratio	2831	0.0000	99.5130	5.701029	11.2381302

Source: Author's calculation

Descriptive statistics of dependent and independent variables of the developed model was presented in Table 2. The average rate of Return on Assets as a financial performance indicator was 7.27%. Judging by the reference value of the ROA (≥ 10%), it can be concluded that these companies did not achieve an acceptable rate of return on engaged assets in the observed period. It is noticeable that ROA indicator showed significant value dispersion from -534.44 to 388.93. It means that in the observed sample there are companies that had endangered financial performance, while on the other hand there are also companies with amazing financial performance. The average value of Short-term Debt to Total Assets and Long-term Debt to Total Assets was 0.26 and 0.16 respectively, with no significant value dispersion. The average value of Debt to Asset indicator was 0.56 which means that 56% of overall assets are financed by debt. The average value of Debt to Equity indicator was 15.30 that means a very high share of debts and riskier business which may indicate the need for a higher rate of profitability of these companies. Very high standard deviation indicates significant value dispersion, from -588.5064 to 8240.2691. The average value of size was 9.40, with no significant value dispersion. The tangibility of asset indicator showed variations of the value, from 0 to 1. So, there were agricultural companies that had already channeled funds into areas that have not resulted in a revenue growth. Likewise, there were also companies with a higher value of asset tangibility indicator that may point to a low level of asset management efficiency. The average value of this indicator was 0.44 which means that agricultural companies on average have less than 50% of fixed assets in the structure of total assets or higher inventory, accounts receivable, cash and other liquid assets. The average value of the current ratio was 5.70, which is in accordance with the reference value (≥ 2). Observed companies had liquid business or 5.70 higher current assets to finance liabilities than the value of current liabilities in the observed period. The discrepancy in the current ratio varied from a minimum value of 0.0000 to a maximum value of 99.5130, which indicated a large discrepancy between companies from the aspect of current liquidity.

Table 3: Correlation matrix

	ROA	Short-term Debt to Total Assets	Long-term Debt to Total Assets	Debt to Asset	Debt to Equity	Size	Asset Tangibility	Current ratio
ROA	1	-0.446**	-0.317**	-0.453**	-0.017	0.102**	-0.101**	0.135**
Short-term Debt to Total Assets	-0.446**	1	0.041*	0.755**	0.041*	-0.155**	-0.043*	-0.147**
Long-term Debt to Total Assets	-0.317**	.041*	1	0.267**	0.019	0.136**	0.229**	-0.100**
Debt to Asset	-0.453**	0.755**	0.267**	1	0.030	-0.152**	0.006	-0.160**
Debt to Equity	-0.017	0.041*	0.019	0.030	1	-0.027	-0.088**	-0.022
Size	0.102**	-0.155**	0.136**	-0.152**	-0.027	1	0.215**	-0.098**
Asset Tangibility	-0.101**	-0.043*	0.229**	0.006	-0.088**	0.215**	1	-0.118**
Current ratio	0.135**	-0.147**	-0.100**	-0.160**	-0.022	-0.098**	-0.118**	1

Source: Author's calculation

Table 3 presented the correlation analysis of the used variables. ROA significantly correlated with six indicators. Positive correlation was noted with Size and Current ratio indicator, and negative with Short-term Debt to Total Assets, Long-term Debt to Total Assets, Debt to Asset, Asset Tangibility.

Table 4: Variance impact factors of variables (VIF)

Coefficients[a]

Model	Collinearity Statistics	
	Tolerance	VIF
Short-term Debt to Total Assets	.401	2.495
Long-term Debt to Total Assets	.809	1.237
Debt to Asset	.369	2.713
Debt to Equity	.989	1.012
Size	.902	1.108
Asset tangibility	.898	1.114
Current ratio	.946	1.057

Source: Author's calculation

Table 4 presented Variance impact factors (VIF) for independent variables in order to test multicollinearity. According to presented results in Table 4, VIF values were less than 5 for all variables, so there was no problem with multicollinearity (according to: Field, 2005).

Table 5: Multiple regression model

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.249	2.723		1.194	.233
Short-term Debt to Total Assets	-11.908	.870	-.339	-13.685	.000
Long-term Debt to Total Assets	-21.590	1.410	-.267	-15.310	.000
Debt to Asset	-2.281	.562	-.105	-4.058	.000
Debt to Equity	.000	.001	.002	.127	.899
Size	1.539	.285	.089	5.405	.000
Asset tangibility	-6.781	1.652	-.068	-4.104	.000
Current ratio	.086	.033	.043	2.636	.008
R Square 0.305					

Source: Author's calculation

Proposed model with presented results in Table 5 was statistically significant with $p<0.05$. The results showed that the company's size had a statistically significant positive impact on the financial performance of agricultural company ($p<0.05$). It means that large and very large agricultural companies usually operate in greater and competitive European markets. They are characterized by a greater scope of diversification of products and activities, better ability to respond to changing market conditions and take a higher risk. They also take advantage of economies of scale and have easier access to cheaper debt sources of financing, as well as greater degree of attractiveness for investors and ability to negotiate with suppliers and other clients. All these circumstances can affect the better financial performance of large and very large European agricultural companies. Larger companies also have better conditions for achieving sustainable growth. The positive impact of size on financial performance was confirmed in research carried out by Abor (2007), Soumadi & Hayajneh (2012), Ramadan (2013), Twairesh (2014), Hatem (2014), Bortych (2017), Akomeah et al (2018), Alrabba et al (2019).

Current liquidity measured by current ratio had a statistically significant positive impact on the financial performance of agricultural company ($p<0.05$). Liquidity management is one of the key concepts from the aspect of sustainable growth and development, survival and performance management. Higher liquidity of large and very large agricultural companies provides a greater opportunity to borrow, respond to changes in market conditions or some unexpected circumstances such as periods of low earnings and also sometimes for financing investments. European large and very large agricultural companies manage to ensure a high

degree of compliance of the time of short-term liabilities settlement and collection of receivables in order to timely supply the business cycle with key inputs. As a result of higher liquidity of these companies, improved financial performance occurred. The positive significant relationship between current liquidity and financial performance was confirmed in research conducted by Priya & Nimalathasan (2013) and Safdar et al (2016), Singh & Bagga (2019) claimed that there is positive insignificant effect of current liquidity on financial performance. On the other hand, Serrasqueiro & Nunes (2008) concluded that liquidity is not a factor affecting financial performance.

Asset tangibility had a statistically significant negative impact on the financial performance of agricultural company ($p<0.05$). Negative relationship assumes that large and very large European agricultural companies did not optimally use fixed assets or not in a way that results in improved financial performance during the observed period. Hereby, engaged net fixed assets of large and very large agricultural companies used as collateral did not result in an acceptable return. On the other hand, some European agricultural companies with a lower level of net fixed assets decided to innovate that had a positive impact on improving performance in observed period. The negative relationship between asset tangibility and financial performance was confirmed in research conducted by Serrasqueiro & Nunes (2008), Zeitun &Tian (2007), Chinaemerem & Anthony (2012), Vătavu (2015), Dieu (2019). It should be borne in mind that larger agricultural companies find it more difficult to change the structure of their assets due to less flexibility. Lesser reliance on net fixed assets in the future can cause greater costs of financial distress for these European companies.

Short-term Debt to Total Assets, Long-term Debt to Total Assets, Debt to Asset as indicators of indebtedness had a statistically significant negative impact on the financial performance of European agricultural company ($p<0.05$). So, the choice of capital structure has a strong influence on the financial performance of agricultural company and on making investment decisions. Different levels of leverage require management to establish an optimal capital structure since financing from borrowed sources increases the company's value and financial risk. The key factor that determines the degree of short-term and long-term borrowing and their impact on financial performance is the bank's credit policy.

Short-term Debt to Assets ratio determines the financial policy of working capital management of agricultural companies on European market. Due to the large volume of sales on European market, large and very large agricultural companies usually satisfy the need for more capital by borrowing in the short term thus reducing agency and capital costs. It should be borne in mind that as the level of short-term borrowing increases, the risk of refinancing

can also increase. The short-term indebtedness of agricultural companies is mainly the result of obligations to suppliers, such as agricultural holdings. Previous research in this field showed that food industry companies in Republic of Serbia were financed to a greater extent from short-term sources, applying an aggressive working capital management policy that had an inverse relationship with profitability (Vuković et al, 2017). Research conducted by Zeitun & Tian (2007), Ebaid (2009), Manawaduge et al (2011), Twairesh (2014), Admassu (2016), Alrabba et al (2019) confirmed that higher levels of short-term borrowing lead to poorer financial performance. Šarlija & Harc (2012) found the negative relationship between short-term borrowing and company's liquidity.

Long-term borrowing is often characteristic of larger and less risky companies measured by Long-term Debt to Assets ratio. By using long-term borrowing as a more expensive method of raising capital, it is obvious that large and very large European agricultural companies had a deterioration in the financial performance. Šeligová & Koštuříková (2019) found that long-term borrowing is often done in order to finance activities or invest in profitable projects that will bring a higher return than the long-term financing costs. The growth of company indebtedness in the agricultural industry leads to an increase in creditors' risk, especially in primary agricultural production. The negative relationship between Long-term Debt to Total Assets ratio and financial performance measured by ROA was based on research conducted by Zeitun & Tian (2007), Ramadan (2013), Twairesh (2014), Quang & Xin (2014), Bui (2017).

The policy of active debt servicing could reduce the opportunities of European agricultural companies to invest in profitable projects which negatively affects the financial performance. Likewise, constant debt growth will result in poorer financial performance of these companies as interest cost growth can be expected. The negative impact of Debt/Asset ratio on financial performance measured by ROA is supported by the Pecking Order Theory indicating that lower indebtedness is characteristic of companies with better financial performance which are reflected in satisfied profitability, higher profits, greater ability to self-finance and more retained earnings (Vuković et al, 2020c). Due to negative relationship between the indebtedness and financial performance, it can be concluded that agricultural companies on the European market should focus on providing more favorable internal sources of financing. The payment of high debt costs has a negative effect on the ability to make a profit and ensure the company's growth and development. The results of research done by Ebaid (2009), Manawaduge et al (2011), Chinaemerem & Anthony (2012), Twairesh (2014), Quang & Xin (2014), Admassu (2016), Alrabba et al (2019), Singh & Bagga (2019), Rejeb &

Missaoui (2019) confirmed a negative and statistically significant relationship between Debt to Asset ratio and company's financial performance.

5. Conclusion

The aim of the paper was to develop a concise analytical framework for the financial performance of agricultural sector on sample of 460 large and very large European agricultural companies engaged in plant cultivation using multiple regression model. In order to achieve that aim, two research questions were set at the begging of the paper. The answer on the first research question is that Size, Liquidity, Asset Tangibility, Short-term debt to Total Assets, Long-term debt to Total Assets, and Debt to Asset are factors influencing the financial performances of agricultural companies of European countries.

The answer on the second research question follows. The ***size*** positively affects the financial performance of large and very large European agricultural companies in the sense that larger companies have better conditions for achieving sustainable growth and advantages of economies of scale, and have easier access to cheaper financial resources and better negotiation position with investors, suppliers and clients. The ***liquidity*** of agricultural companies positively correlates with their financial performance. It provides a greater opportunity to borrow and better respond to crisis and recession periods. Achieving higher liquidity, these companies can easily coordinate the settlement of short-term liabilities and the collection of short-term receivables from the time aspect. Negative relationship between ***asset tangibility*** and financial performance of agricultural companies assumes that engaged net fixed assets did not result in an acceptable return. All ***debt levels*** (STD, LTD, TDA) shown negative correlation with financial performance which suggests that the choice of capital structure strongly influences the profitability and investment decisions making process of large and very large European agricultural companies.

Bearing in mind the natural and technological potentials of plant production in the Europe and the importance of food industry, the results of this research may benefit manufacturers, management of agricultural companies, their shareholders and other external stakeholders on the European market. The developed analytical framework can point to potential opportunities for improving the financial performance and can help management of agricultural companies to avoid financial traps and overcome challenges in achieving that goal. Besides, this analytical framework provides information support for external stakeholders to recognize agricultural companies with potential for achieving and maintaining

high financial performance in conditions of the sustainable economic growth. This may be helpful for external stakeholders in their investment and resource allocation decision process.

There are limitations to this research that are at the same time guidelines for future research. Firstly, the research is geographically limited to Europe countries only. It is also limited to agricultural companies engaged in plant cultivation only. Thirdly, the research was conducted based only on disclosed data from financial statements of agricultural companies found in TP Catalyst database. In further research it would be advisable to consider some other determinants that impact profitability, as well as to include some other financial and non-financial performance measures besides ROA. The research provides an empirical basis for future research analysing the type and nature of the relationship between key determinants and the company's financial performance.

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