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CAPITAL STRUCTURE AND PROFITABILITY.
THE CASE OF COMPANIES LISTED IN ROMANIA

ILIE Livia
Lucian Blaga University of Sibiu, Romania

VASIU Diana
Lucian Blaga University of Sibiu, Romania

Abstract:

Alongside with the acquisition and the efficient use of assets (investment decision and asset management), financial managers are concerned with their financing. The capital structure of a company is of interest not only for practitioners but also for theorists so that in the last six decades important theories were developed from the capital structure irrelevance theory of Modigliani and Miller to theories that include market imperfections and incentives into the models (the static trade-off theory, the pecking order theory). In practice, financial managers take into account not only quantitative determinants, but also qualitative ones, so that the decision becomes complex and the outcome differs across industries and companies. Many empirical studies were performed in the last decades in an effort to identify the relationship between the chosen capital structure and the performance of a company. We aim to add specific results to empirical studies already performed. Our study investigates the relationship between the financial mix and the profitability of companies listed in Romania, covering the interval 2017-2021.

Key words: *capital structure, financial leverage, cost of capital, profitability, value of the company*

1. Introduction

The basic financial resource of a company is the cash flows produced by its assets and operations. "When the firm is financed only with equity, all cash flows from operations belong to the shareholders" (Ilie & Olaru, 2013). When the company is financed with both debt and equity, these cash flows are divided between creditors (the relatively safer stream of cash flow) and shareholders (a more risky stream of cash flows).

The mix of sources of financing represents the capital structure of a company. Capital structure is the proportion in which the company is financed through debt. A company that is using also the debt financing is considered to have financial leverage. A company financed only through equity is an unlevered company. Companies don't have same capital structures. In practice for instance it is observed that most high tech companies have more

equity financing, as opposed to banks and utility companies that have a higher proportion of debt financing (Brealey, Myers & Marcus, 2000, p. 424).

Modern management assumes that the final goal of a company is to maximize the wealth of the owners, which is equivalent to maximize the market value of the company's stocks. The main justification consists in the fact that the price per share incorporates the effects of all financial decisions made by the company. As Gitman (2006, p. 13) states, the share market value is based on "the timing of returns (cash flows), their magnitude, and their risk". In consequence, managers have to accept only those alternatives that are expected to increase the price per share (**Figure 1**).
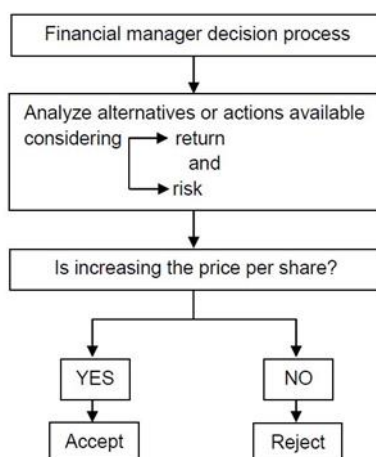
Figure 1 Financing decision process
Adapted from Gitman (2006, p14)

Financial managers are concerned with the acquisition of assets (investment decision or capital budgeting), their financing (the financing decision or capital structure), and the efficient management of these assets. Dividend policy is a financial decision that has an important impact on the price per share (as investors discount the future cash flows they are expecting), but it is also considered part of the financing decision, as the retained earnings represent an internal source of financing.

How can financial managers create value for the company and their shareholders? One way to create value is through the investment decision (capital budgeting). Even if in real competitive world it is not easy to find investment opportunities with a positive Net Present Value, companies try to add value through their capital budgeting by locating the unsatisfied demand for a product or service, by creating a barrier to make it more difficult for other companies to compete and as a result to increase their NPV or to make it positive, by developing new products or services or by producing the existing ones at a lower price as compared to competition. The financing decision typically relates to How much?, What type?, and When? to sell Debt or Equity. In order to add value to the company, one should consider the financing alternative that has positive NPV. Companies have many more investment opportunities with positive NPV than financing ones. It is more difficult to add

value through the financing option, first of all because financial markets are more efficient as compared to other markets.

2. Theoretical framework and empirical literature review

There are no final answers if capital structure affects the value of the firm. Still, the fact that companies decide very carefully on their financing mix allows us to affirm that capital structure is a complex issue. There are many factors to be considered, even if the fundamental principle assumes comparing the incremental benefits of a higher financial leverage with its marginal costs or disadvantages.

The traditional approach to capital structure as synthetized by Van Horne & Warchowicz (2005, p 449) states that managers can increase the value of the company using an optimal financial leverage, so it assumes the existence of an optimal capital structure that minimizes the cost of capital and maximizes the total value of the company. Considering a company in a world with no taxes, that has a payout ratio of 100% and profits are not expected to grow, we define three types of returns:

- Return on debt, r_D, assuming debt is a perpetuity, $r_D = \frac{annual\ interest\ on\ debt}{market\ value\ of\ debt}$
- Return on equity, r_E, assuming no growth in earnings and 100% payout ratio, a perpetual stream of dividends, $r_E = \frac{annual\ profits}{market\ value\ of\ equity}$
- Overall capitalization rate, $r = \frac{net\ operating\ income}{total\ market\ value\ of\ the\ company} = \frac{interest\ paid\ + profits\ to\ shareholders}{market\ value\ of\ debt\ and\ equity}$. The overall capitalization rate can also be defined and expressed as WACC,

$$r = r_D \left(\frac{market\ value\ of\ debt}{total\ market\ value\ of\ the\ company} \right) + r_E \left(\frac{market\ value\ of\ equity}{total\ market\ value\ of\ the\ company} \right)$$

According to the traditional approach, a company that is increasing the financial leverage is reducing the cost of capital and is increasing the value to the shareholders. As the financial leverage is increasing, investors ask for a higher required rate of return, due to the fact that their risk is increasing. If at lower leverages the benefit of cheap debt capital is not totally offset by the increase in the required rate of return, at higher leverages the benefit is washed out and the cost of capital is increasing.

The return on debt starts to increase only at larger levels of the financial leverage as compared to the return on equity that is increasing at an increasing rate as financial leverage is higher and consequently risk is higher. So the weighted average cost of capital is decreasing in the first stage as leverage goes up, but it starts to increase in the second stage as leverage becomes significantly higher. So it can be identified an optimal capital structure (with a moderate use of financial leverage) for which WACC is at the minimum and in consequence the total value of the company is at the maximum due to the fact that the capitalization rate (r, WACC) used to discount the stream of operating income is at the lowest.

Considering the investment decision and the dividend policy given, one can analyze the impact of the financing decision on the value of the firm and on the cost of capital. Two Nobel Prize winning finance theorists, Franco Modigliani and Merton Miller (MM), developed

in 1958 their theory that contradicts the traditional approach. MM consider that, in a perfect world with no taxes and well-functioning capital markets, the stock price and the cost of capital does not depend on the capital structure, capital structure is irrelevant (Modigliani & Miller, 1958). They argue that the relationship between the financial leverage and the cost of capital, respectively the value of the firm, can be explained by the operating income approach mainly by the capacity of the company to generate cash flows.

By relaxing the restrictions of perfect markets one can identify the market imperfections and incentives that explain why the arbitrage process used by Modigliani & Miller is not working in real world conditions. A first imperfection introduced in the model by MM (Modigliani & Miller, 1963) is taxation. Debt financing has an important advantage by reducing the slice to the government. Because interest is tax-deductible there is a tax-shield for the company, which helps reducing the after-tax cost of debt and hence the cost of capital. Consequently, the value of the company goes up. But debt comes also with a disadvantage: interest is a fixed financial cost and it is increasing the total risk by adding financial risk to the business risk of the company. In consequence, the more debt a company is using the higher the probability of bankruptcy, and the higher the cost of financial distresss. The Static Trade-Off Theory of capital structure is concluding that there is an optimal capital structure for a company that is balancing the advantages and disavantages of debt financing. The optimal capital structure will correspond to "the level of debt for which the present value of the tax-shields due to additional debt is just off-set by the present value of the cost of financial distress and agency costs, and the value of the firm is at the maximum" (Ilie & Olaru, 2013).

In real markets, the asymmetry of information between managers and investors still exists. So it is assumed that managers will finance their investments with new equity only when they consider shares are overvalued (they signal `bad news` to investors), and they issue debt when shares are considered to be undervalued (`good news` for investors) (Myers,1984) and (Myers and Majluf, 1984). The signaling effect of the financing alternative chosen by managers is stating that managers will primarily prefer the internal source of financing (retained earnings) and only in addition they will finance the investment opportunities externally, first by issuing debt and only afterwards, if still needed, issuing equity (The Pecking Order Theory). According to this theory, companies with high profits will tend to use more internally generated funds.

While deciding on the financing alternative, managers take into account many other qualitative aspects. Van Horne and Wachowicz (2005, pp 460-461) make a comprehensive list, out of which we mention several elements: corporate tax regime (the higher the taxation, the more attractive debt becomes), ability of the company to generate cash-flows from operations (the higher and more stable the cashflows, the more debt company is using), agency costs (the higher the willingness of managers to accept the monitoring process of creditors, the more debt is used), EBIT-EPS breakeven analysis (managers use debt when estimated EBIT is higher than computed EBIT breakeven, otherwise it will use equity to generate higher EPS for shareholders), flexibility (managers will avoid using debt at maximum in order to not reduce the flexibility of future financing decisions), timing (depending on the market conditions, when interest rates are low, more debt, as compared to the situation of high interst rates when managers will favor equity).

Over the last decades, many researchers tested the different theories on capital structure for different periods, on different companies and environments, but the results are mixed in what concerns the link between the chosen financial mix and the performance of the company. Musah (2018) and Pal Singh and Bagga (2019) were also performing a comprehensive literature review on which we add other important studies. In synthesis, we remind here several relevant ones:

1. Abor (2005), listed firms on Ghana Stock Exchange, 1998-2002, significant negative relationship between long term indebtness and ROE - mentioned in Musah (2018) and Pal Singh and Bagga (2019)

2. Eriotis, Vasiliou & Ventoura-Neokosmidi, (2007), 129 greek companies listed on Athens Stock Exchange, 1997-2001, negative relationship between debt ratio and the growth of the companies

3. Salim & Yadav (2012), 237 Malaysian listed companies, 1995-2011, significant positive relationship between performance and capital structure - mentioned in Musah (2018) and Pal Singh and Bagga (2019)

4. Shubita & Alsawalhah (2012), 39 industrial companies listed on Amman Stock exchange, 2004-2009, inverse relationship between debt ratio and profitability – mentioned in Musah (2018)

5. Arowoshegbe & Idialu, (2013), 60 non-financial listed companies in Nigeria, 1996-2010, significant negative relationship between the financial mix and profitability, confirmation of pecking order theory

6. Arabahmadi & Arabahmadi (2013), 252 non-financial companies listed on Teheran Stock Exchange, 1999-2008, positive relationship between ROE and short-term debt, and negative relationship, but negative relationship between ROE and long-term debt - mentioned in Musah (2018)

7. Barbuta-Misu (2013), 3 large phama companies in Romania, 2008-2012, in general a positive effect of leverage on ROE

8. Ilie & Olaru, (2013), 23 listed Romanian companies, 2004-2011, no coherent financing policy (leveraging before the financial crisis, deleveraging after the financial crisis started in 2008)

9. Vătavu (2015), 196 Romanian companies listed on Bucharest Stock Exchange, 2003-2010, higher performance when using equity - mentioned in Pal Singh and Bagga (2019)

10. Nasimi (2016), 30 companies part of FTSE-100 index in London, 2005-2014, debt-equity ratio significant positive impact on ROE - mentioned in Pal Singh and Bagga (2019)

11. Herciu & Ogrean (2017), 59 non-financial, most profitable companies from Global Fortune 500, 2016, significant correlations between ROE and debt-to-equity ratio, both positive and negative

12. Musah (2018), 23 commercial banks, Ghana, 2010-2015, high leverages registered, positive relationship between total debt ratio and profitability

13. Omoregie, Olofin, & Ikpesu, (2019), 18 manufacturing companies, listed in Nigeria, 2005-2017, higher debt ratio is beneficial for profitability, liquidity and stock orice, but the financing decision should be correlated to the economic cycle (higher debt, higher profitability and liquidity in an economic boom)

14. Pal Singh and Bagga (2019), 50 listed companies in India, composing Nifty, 2008-2017, significant relationship of financial mix on profitability
15. Wieczorek-Kosmala, Blach, & Gorzen-Mitka, (2021), non-listed energy companies from Hungary, Poland, Slovakia, Czech Republic, 2015-2019, inverse relationship between debt financing and profitability (confirmation of the pecking order theory)

3. Data and methodology

The aim of this study is to investigate if there is an impact of capital structure on the financial performance of listed companies in Romania. All non-financial companies listed on the Bucharest Stock Exchange, in the Standard and Premium categories, were analyzed. Their activity was monitored throughout the 2017-2021 period, thus observing the impact of the health crisis generated by COVID-19 on the evolution of the financial performance and capital structure of companies. We created a sample of 65 companies listed throughout the analyzed period, out of which 13 in the premium category and 52 in the standard category. Also, in each year, the companies that recorded a loss were removed from the sample, considering that in such a situation there is no performance. The financial performance ratios were computed using the financial statements available on bvb.ro and tradeville.ro.

In the empirical studies consulted, the link between the financial performance of a company and its capital structure was analyzed by studying the relationship between ROA and ROE, as performance indicators and respectively debt-to-assets, debt-to-equity and debt-to-permanent capital ratios.

Return on Assets (ROA) and Return on Equity (ROE) are the two ratios selected, considering they are the most significant and generally recognized ratios as measures of the financial performance of companies. These were also the ratios used in all the other empirical studies examined. Moreover, ROA is considered a measure of managerial efficiency, regardless the capital structure. The calculation of the financial ratios was done by reporting Net Profit to Total Assets in the case of Return on Assets (ROA), respectively by reporting the Net Profit to Equity in the case of the Return on Equity (ROE). Since the analysis was carried out for listed companies, it was also chosen another performance indicator specific to listed companies, namely Earnings-per-Share (EPS).

In addition, Operating margin (EBIT margin) was also taken into account being an important ratio that describes the company's ability to generate added value for shareholders through its operations. It is calculated by reporting the operational result (EBIT) to the turnover (Sales).

For the analysis of the capital structure, Total Debt-to-Total Assets (DTA), Debt-to-Equity (DTE) and Debt-to-Permanent Capital (DTPC) ratios were calculated, dividing Total Debts by Total Assets, by Equity or by Permanent capital.

The meaning and intensity of the links between performance indicators and capital structure indicators were tested, for each year from 2017-2021, using the SPSS software.

4. Results

Analyzing the mean from descriptive statistics of the collected variables, presented in *Table 1*, no pattern of evolution of performance indicators can be highlighted, excepting EPS, which has had a constant downward evolution.

Table 1. The mean value of the performance indicators between 2017-2021

Ratios	2017	2018	2019	2020	2021
ROA	17,12	7,18	6,84	5,61	9,28
EPS	1,39	1,19	1,05	0,86	0,91
ROE	12,82	17,51	7,66	9,10	14,54
EBIT MARGIN	17,39	20,15	14,32	10,76	31,12

On average, the mean value of the performance indicators ROA and EPS decreased with an average annual rate of 7.37%, respectively 12,57%, while ROE increased with an average annual rate of 1.59%, from one year to another.

The evolution of the mean value of the performance indicators between 2017-2021 is presented in the following graphs.

EBITMARGIN
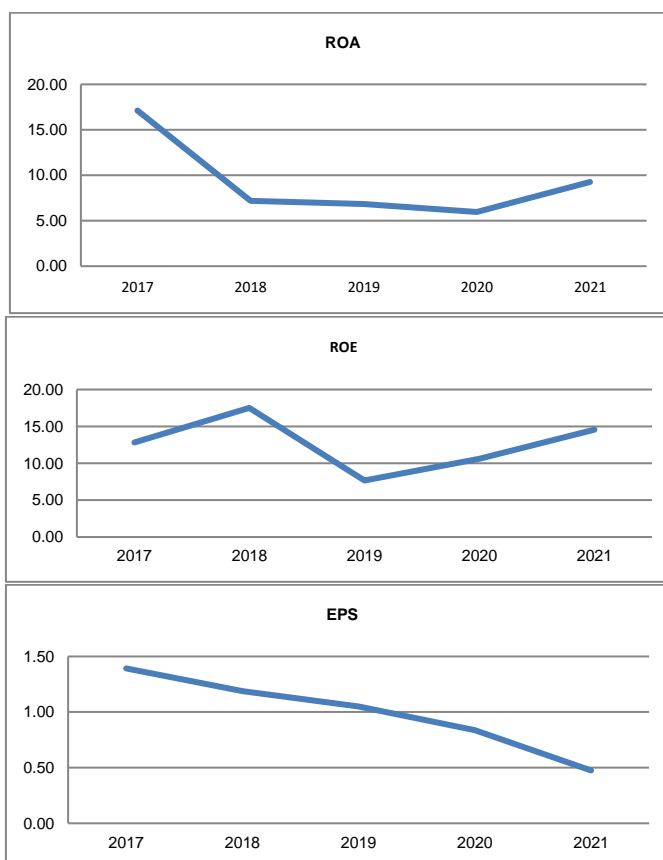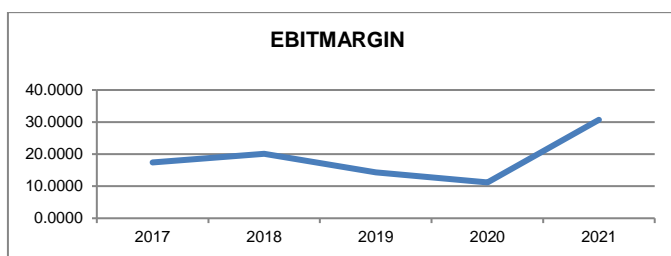
Regarding the capital structure indicators, the most frequently chosen independent variable was the financial leverage ratio (Debt-to-Equity), computed by dividing total debt to equity. In another studies, Leverage was defined as the total liabilities divided by the total assets (Debt-to-Total-Assets).

Furthermore, Debt-to-Permanent Capital Ratio was also chosen as a capital structure indicator, calculated by dividing company's total debt by its total permanent capital, which is total debt plus total shareholders' equity.This ratio also indicates the level of risk a company undertakes, since the higher the Debt-to-Permanent Capital ratio, the riskier the company.

Analyzing the mean value of the capital structure indicators, provided by SPSS descriptive statistics and presented in *Table 2*, there is a fluctuating evolution of Debt-to-Equity and a similar evolution model of Debt-to-Permanent Capital ratio and Debt-to-Total Assets.

Table 2. The mean value of the capital structure indicators betwwen 2017-2021

Ratios	2017	2018	2019	2020	2021
DTE	38,90%	95,09%	39,19%	64,75%	67,40%
DTPC	37,63%	67,48%	58,60%	59,35%	54,15%
DTA	25,75%	36,12%	38,87%	38,72%	37,44%

On average, the mean value of Debt-to-Equity recorded the highest average annual rate of increase, of 7.11%, from one year to another, while the mean value of Debt-to-Permanent Capital and Debt-to-Total Assets registered an almost identical average annual growth rate, of 4,66% and respectively 4,76% from one year to another. The evolution of the mean value of the capital structure indicators betwwen 2017-2021 is presented in the following graphs:

DTE
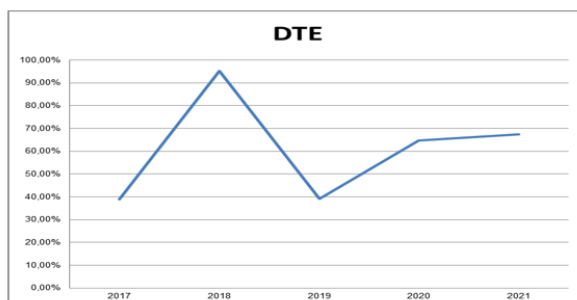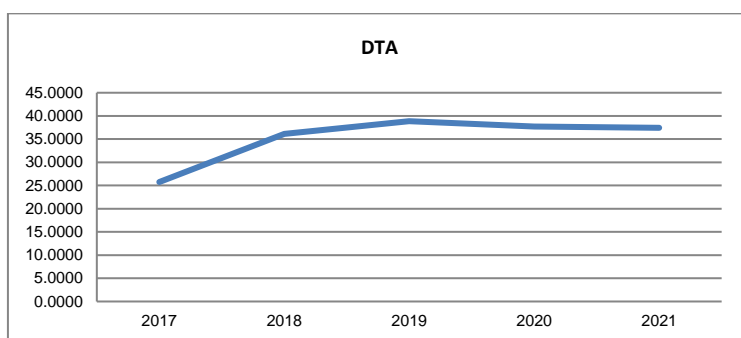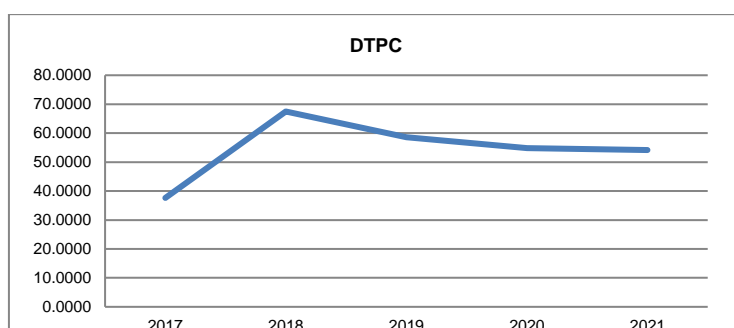
Testing the existence of a possible link between the financial performance indicators (ROA, ROE, EPS and EBITMARGIN) and the capital structure was carried out by means of the bivariate two-tales Pearson correlation, using SPSS. The findings are presented in *Table 3*.

Table 3. Pearson correlation

| Corelations	DTE	DTPC	DTA
ROA	-,286**	,025	,121
ROE	,381**	,289**	-,003
EPS	-,015	-,049	-,031
EBITMARGIN	-,009	,118	,084

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Between EPS and EBITMARGIN and capital structure there is no statistically significant correlation, for the period 2017-2021. Also, no statistically significant correlation was identified between any performance indicators and DTA.

Pearson correlation of ROA and DTE was found to be low, almost moderate and negative, and statistically significant. Between ROA and DTPC and ROA and DTA no statistic significant correlation was found.

Based on this correlation, a relationship between ROA and DTE was sought, by means of linear regression analysis, considering ROA as the dependent variable.

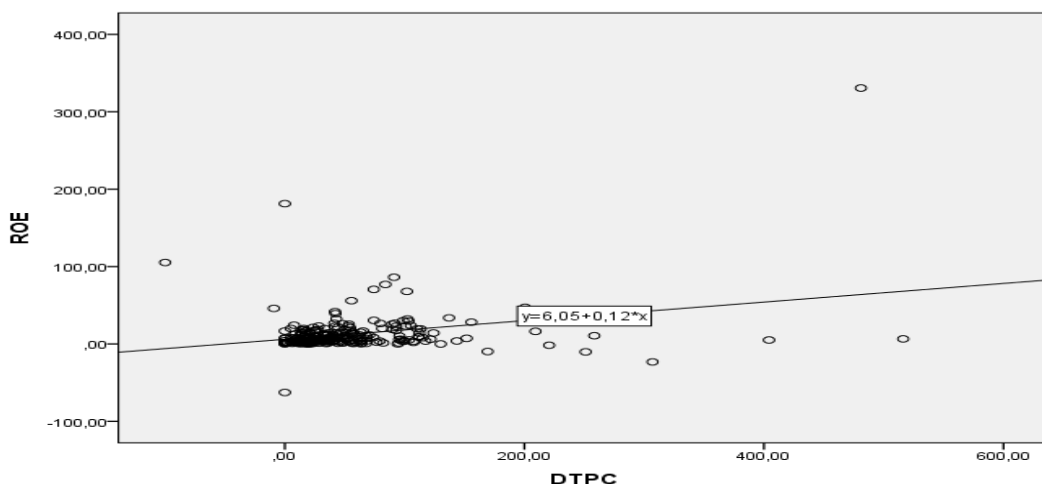Scatterplot of ROA against DTE with regression line $y = 12.74 - 5.74 \cdot x$
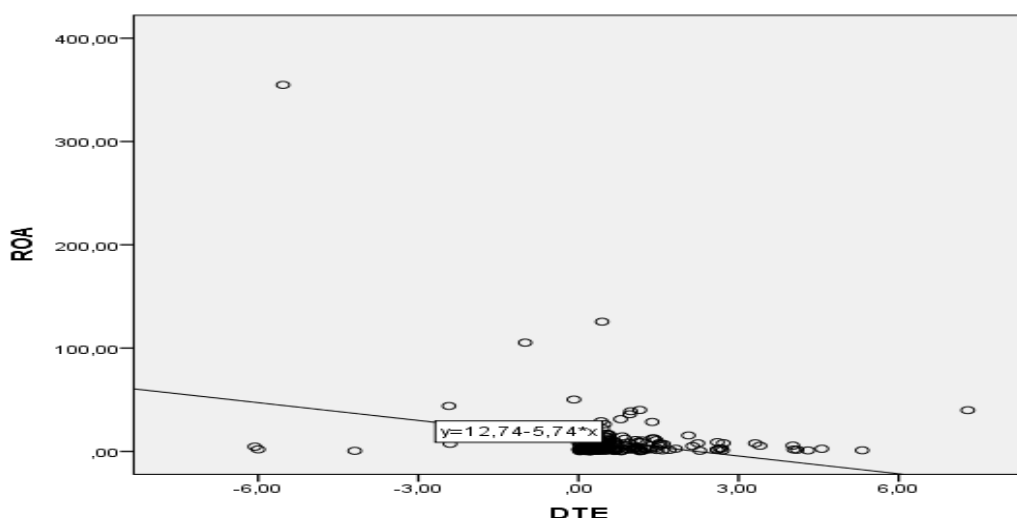
According to the regression model, DTE significantly influences on ROA, but is explaining only 8,2% of the changes in ROA, the variables being negative correlated. The regression model is significant, with a Sig. value smaller than 0,05.

ROE was positive and moderate correlated with DTE and DTPC, the correlation being statistically significant, the correlation between ROE and DTE being 10 percentage points higher than in the case of DTPC.

Scatterplot of ROE against DTE with regression line $y = 7.59 + 8.27 \cdot x$
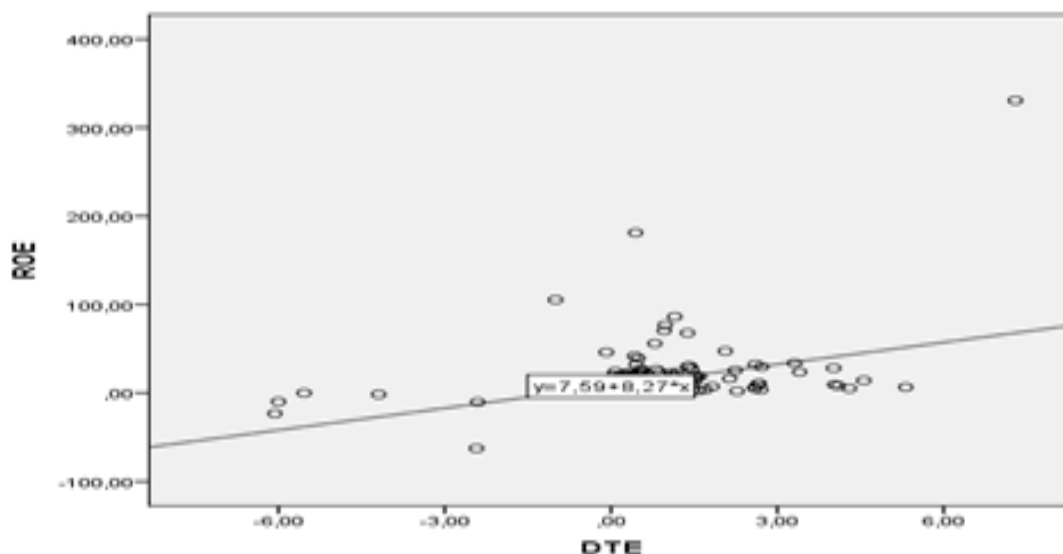
The regression analysis between ROE and DTE leads to a statistically significant model, DTE significantly influencing on ROE, explaining only 14,6% of the change in ROE, the variables being positive correlated. The regression model is significant, with a Sig. value smaller than 0,05.

The regression analysis between ROE and DTCP leads to a statistically significant model, DTCP significanty influencing on ROE, explaining 8,3% of the change in ROE, the variables being positive correlated. The regression model is significant, with a Sig. value smaller than 0,05. The change in ROE due to DTPC is almost similar with the change in ROA due to DTE.

Further, it was analyzed how the economic, social and political context in Romania influenced the relations between performance and capital structure, at the level of each year.The analyzed period was marked by strong political disturbances (anti-corruption protests from 2017-2019), legislative changes from 2018, COVID-19 crisis triggered in 2020. Thus, the governmental measures undertaken during the pandemic, both related to the lockdown and those which supported companies during the sanitary crises, could have guided the companies towards different financing decisions. For this, the Pearson correlation coefficients were analyzed separately, for each year from the 2017-2021 period, for all performance and capital structure indicators.

YEAR	PERFORMANCE INDICATOR	Correlations		
		DTE	DTPC	DTA
2017	ROA	-,775**	,137	,256
2018		,292*	,291*	,189
2019		-,138	-,140	,339*
2020		,115	,072	-0,012
2021		-,060	-,151	-,032
2017	ROE	,037	-,238	-,446**
2018		,665**	,618**	,400**
2019		,440**	-,047	-,424**
2020		,337*	,308*	,207
2021		,106	-,118	-,025
2017	EPS	-,063	-,043	-,022
2018		-,042	-,061	-,051
2019		-,065	,006	,019
2020		-,043	,028	,084
2021		-,043	-,016	-,042

2017	EBITMARGIN	-,723**	,270	,462**
2018		,590**	,544**	,251
2019		-,064	-,207	-,092
2020		-,078	-,262	-,258
2021		-,090	-,230	-,114
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

Analyzing the correlations at the level of each year, only in the case of EPS no statistically significant correlation is recorded.

The year 2017 is characterized by negative strong and statistically significant correlation of ROA, respectively EBITMARGIN and DTE, while DTA is negative moderate corelated with ROE and is positive moderate corelated with EBITMARGIN.

According to the linear regression models, carried out for indicators between which there is a statistically significant correlation, in 2017, 60% of ROA evolution is explained by DTE, 20% of ROE evolution is explained by DTA, 21,4% of EBITMARGIN evolution is explained by DTA, and 52,2% of EBITMARGIN evolution is explained by DTE. Overall, 85% of EBITMARGIN evolution is explained by capital structure.

In next year, ROE is positive moderate correlated with all three capital structure ratios, 23% of ROE evolution being explained by capital structure.

EBITMARGIN is positive moderate correlated with DTE and DTPC, while the correlation of ROA with DTE and DTPC becomes low positive.

Starting with 2019, there is no longer any high level of correlation, the link between performance and capital structure being weak, in the case of ROA and ROE, and statistically insignificant in the case of EBITMARGIN. Also, in 2019, the performance expressed through ROA registers a low moderate positive correlation with DTA, although before it was with DTE and DTPC.

During the pandemic years 2020-2021, there was no statistically significant correlation between performance and capital structure.

5. Conclusions

Since the analysis covered the period 2017-2021, the capital structure-profitability relationship, where it existed, was under the impact of the major events of recent years generated by the covid crisis. On the whole, during the analyzed period, the most significant relationships were identified between ROA and DTE, respectively between ROE and DTE and DTPC, but without these being greater than 40%. Being significant from a statistical point of view, in the case of these relationships between the structure indicators and profitability indicators respectively, a linear regression model was built, but the resulting relationship must be approached with prudence, as the structural elements explain less than 15% of the profitability variation.

The analysis at the level of each year reveals other situations: before the covid pandemic, respectively in 2017 and 2018, the capital structure-profitability relationship demonstrated a strong correlation: indirect, of 77.5% between ROA and DTE in 2019 and direct, of 66.5% between ROE and DTE in 2018. At the same time, although for the entire

period 2019-2021 no significant correlation was identified between EBITMARGIN and the capital structure, however, in 2017 it is direct and strong, of 72.3% between EBITMARGIN and DTE in 2017 and 59% the following year.

With the outbreak of the covid pandemic, the situation changes, no statistically significant relationship can be identified between the profitability indicators and those of the capital structure. The causes must be analyzed in terms of the effects of the lockdown, the prudence of companies due to the uncertainty of the future, as well as the support measures provided by the government that relaxed the lending policy and allowed the staggered rates.

From these considerations, future research directions will be oriented towards identifying other influencing factors on the relationship between the capital structure and the profitability of companies and expanding the research horizon at the listed companies in Central and Eastern Europe.

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