

# **ANALYSIS OF THE CORRELATION BETWEEN PROFITABILITY AND RISK IN THE METALLURGICAL ROMANIAN INDUSTRY**

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**Abstract:** Profitability, defined as the ability of a company to make a profit, is monitored and analyzed at the level of the metallurgical industry in Romania, the companies whose data we analyzed being companies listed on the Bucharest Stock Exchange. At the same time, we followed at the level of this industry the evolution of the risk on the two activities: exploitation and financial, realizing at the end a correlation analysis between profitability and risk with the help of the Pearson correlation coefficient calculated with the SPSS program. The period chosen for the analysis of profitability and risk at the level of companies in the metallurgical industry in Romania is 2013 - 2019.

**JEL classification: C15, G00, C49**

**Key words: profitability, risk, correlation, regression.**

## **1. INTRODUCTION**

This article aims at analyzing the correlation between profitability and risk for five companies in the Romanian metallurgical industry, listed on the Bucharest Stock Exchange through the simple linear regression model. To determine the correlation between profitability and risk related to the selected companies, the following synthetic indicators were analyzed, for a period between 2013-2019: operating profit, gross profit, net profit, turnover, economic rate of return (ROA), the rate of financial return (ROE), the rate of return on income, the rate of return on expenses, the operating leverage ratio, as well as the financial leverage ratio. After analyzing the level and evolution of these indicators, we performed a correlation analysis using the Pearson correlation coefficient, coefficient calculated using the SPSS statistical program. The paper is structured in four parts, the first part presents the concepts and terms used, with which we defined the profitability indicators used to calculate the correlation between profitability and the leverage ratio and financial leverage used to analyze operating risk and financial risk, in the second part is presented the research methodology used for the case study, followed by the third part where we presented the case study, and in the last part are presented the conclusions based on the analysis of the correlation mentioned above for the selected companies.

## **2. OBJECTIVES**

Profitability defined as the company's ability to make a profit, an indicator that also reflects its economic performance, according to the following authors Sichigea N.,

Berceanu D., Florea N., Vasilescu L., is the first concept on which we stop with the analysis .

In the opinion of the authors Vasile Robu and Nicolae Georgescu, "profitability expresses the capacity of an enterprise to obtain profit by using the factors of production and capitals regardless of their origin". Its level depends on the company's activity (quality and volume of supply, marketing performance, unit cost level, management performance, etc.) and exogenous factors, independent of the company (volume and dynamics of demand, intensity of competition, price level formed by the market , consumer preferences, sa) ". The author Buse Lucian and all defines profitability as a synthetic form of expressing economic efficiency, which reflects a company's ability to make a profit. The profitability analysis can be performed both with the help of absolute indicators and with the help of relative indicators, we referring only to the relative indicators of profitability.

Economic rate of return (ROA) evaluates the total performance of the company, regardless of the financing method or the fiscal system and is of interest to the company's managers, who through it appreciate the efficiency of using available assets. This is calculated as the ratio between gross profit (Pb) and total assets (At):

$$ROA = \frac{Pb}{At}$$

The rate of financial return (ROE) is the indicator that best expresses the efficiency with which the company's equity is used and reflects the ability of a company to make a profit. Those interested in the level of this rate are, first of all, the shareholders, who decide according to its size if their investment is profitable and if they will continue to invest new capital in the company or will have to give up for a short period a part of dividends. The rate of financial profitability is influenced by the existence of two factors: the financial structure of the enterprise and its degree of indebtedness. This rate is calculated as the ratio between net profit (Pn) and equity (Kpr):

$$ROE = \frac{Pn}{Kpr}$$

The rate of return on income (ROS) estimates the degree of efficiency of the company's marketing activity following the promotion campaigns undertaken and the pricing policy applied at the level of the entire company. This rate is influenced by the following factors: the economic and competitive environment and the degree of risk of the field of activity. Also, the rate of profitability of sales highlights the strategy adopted regarding the attraction of new customers through the quality products offered based on the demand and the control of the production costs. It is calculated as the ratio between the operating profit (Pe) and the turnover (CA):

$$ROS = \frac{Pe}{CA}$$

The rate of return on expenditures (Rc) expresses the efficiency of the use of consumed resources, it is expressed as the ratio between a certain economic result and the expenditure made to obtain it. This rate is of interest to company managers who must pursue the most efficient use of available resources within the enterprise. It is calculated by means of the ratio between the operating profit (Pe) and the operating expenses (Ce):

$$Rc = \frac{Pe}{Ce}$$

The next concept we have focused on is conceptual risk at the level of operating and financial activities. The risk of exploitation is the inability of the enterprise to adapt in time and at the lowest cost to changes in the environment in which it operates. It can be defined as the variation of economic or financial profitability, if the enterprise finances its activity exclusively from its own capitals. Also, the exploitation risk expresses the volatility of the economic result in exploitation conditions. In this article we have chosen to determine this risk through the operating lever coefficient (operating leverage). It highlights the marginal result of exploitation resulting from the increase or decrease of the activity volume. The exploitation leverage coefficient evaluates the sensitivity of the exploitation result to the variation of the activity level.

$$CLE = \frac{\frac{\Delta Re}{Re}}{\frac{\Delta CA}{CA}}$$

Where: Re - exploitation result

$\Delta Pe$  – sporul absolut al rezultatului exploatarii

$\Delta CA$  – sporul absolut al cifrei de afaceri

Financial risk is associated with the way an enterprise finances its own productive activities. A company that uses debts to finance its activity is obliged to pay for them the interests and the related rates when they reach maturity. The company increases its financial risk by contracting fixed obligations, such as long-term leasing or bank credit. In order not to assume fixed obligations, the company uses as financing instrument of the business the own capital, obtained from the exploitation activity (ie from undistributed profits) or the amounts attracted following the issuance of new shares. The financial leverage ratio is calculated as follows:

$$CLF = \frac{\frac{\Delta Pn}{Pn0}}{\frac{\Delta Pe}{Pe0}}$$

Where: Pn – net profit

$\Delta Pn$  – sporul absolut al profitului net

$\Delta Pe$  – sporul absolut al profitului din exploatare

### 3. METHODOLOGY

For the analysis of the correlation between profitability and risk in the metallurgical industry in Romania, we chose five companies from this industry, listed on the Bucharest Stock Exchange, namely: S.C. ALRO S.A., S.C. ALUM S.A., S.C. IPROLAM S.A., S.C. GALFINBAND S.A. and S.C. ALUMIL ROM INDUSTRY S.A.

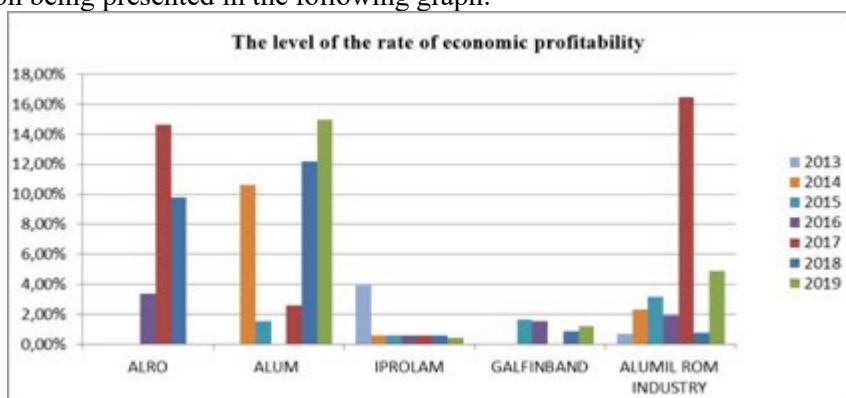
The period subject to analysis is 2013-2019, the data necessary for the calculation of the indicators being taken from the annual financial results published by the chosen companies on the BVB website. Indicators calculated to be able to analyze the level and evolution of profitability are: economic rate of return (ROA), rate of financial profitability (ROE), rate of return on income (ROS) and rate of return on expenditure (Rc). For the analysis of operating and financial risks we used the operating leverage ratio (CLE), as well as the financial leverage ratio (CLF). Subsequently, the analysis of the correlation between the economic rate of return, the financial rate of return, the operating leverage

ratio and the financial leverage ratio in the Romanian metallurgical industry was performed using the Pearson correlation coefficient calculated with the SPSS statistical program.

#### 4. ANALYSES

The indicators of profitability and efficiency of the activity can create a good image about the profit generation activity by the organization.

The first indicator analyzed is the rate of economic profitability, the level and evolution being presented in the following graph:



**Figure no. 1** The level of the rate of economic profitability

*Source: the author's own concept*

According to the data presented in the graph, we can see that all the analyzed companies showed fluctuations in economic profitability in the period 2013-2019. In 2019 the company that had the highest level of this indicator was S.C. ALUM S.A. (14.96%), and the one that reached the lowest level of the rate was S.C. ALRO S.A. At the level of 2018, the highest value was 12.20%, registered by the company S.C. ALUM S.A., and the lowest value was the one marked by the company S.C. IPROLAM S.A. of 0.58%. The highest value of this rate was 16.45% being recorded by S.C. ALUMIL ROM INDUSTRY S.A. in 2017.

SC ALRO S.A. presented a fluctuating trend of this rate, registering an increase in 2017 compared to the previous year, the value reached being 14.64%, as a result of the increase in gross profit in a share clearly higher than the increase in total assets. In 2018, the company experienced a sudden decrease compared to 2017, being generated by the decrease of the gross profit by 105,799,723 lei, as well as by the increase of the total assets by 203,119,043 lei. For the years 2013, 2014, 2015 and 2019 the company had a zero rate of economic profitability, as it did not record gross profit.

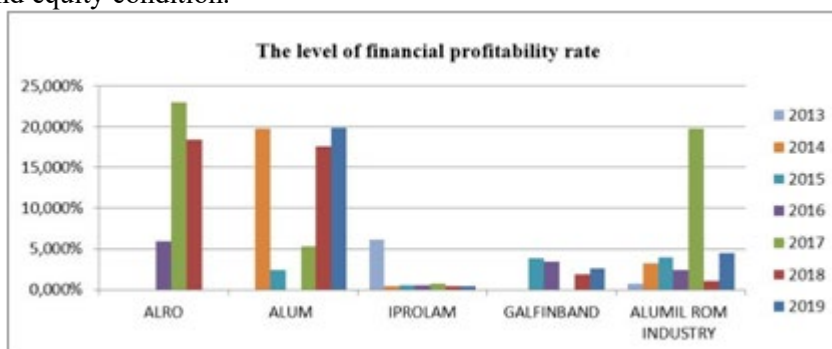
SC ALUM S.A. registered an ascending evolution in 2014, compared to 2013, as well as in the period 2017-2019, the last year analyzed being the one in which the company reached the maximum value of this indicator, namely 14.96%. From 2014, the level of economic profitability rate decreased until 2016, when zero value was registered, due to the fact that the company did not have a gross profit.

SC IPROLAM S.A. experienced a sharp decrease in ROA in 2014 compared to the previous year, the main cause being the decrease in gross profit by approximately 88.23%, the total assets decreasing to a lesser extent by only 22.39%. In the period 2014-2019 the company registered a constant economic profitability, located around 0.56%.

SC GALFINBAND S.A. presented a relatively constant trend of this type of rate, with small fluctuations, with values between 1.63% and 0.85%, except for the years 2013, 2014 and 2017 when it had zero values, as the company did not make gross profit.

SC ALUMIL ROM INDUSTRY S.A. recorded a considerable increase of this indicator in 2017, when it reached the maximum value of ROA of 16.45%, due to the increase of gross profit by 860% compared to 2016, the total assets increasing only by 10.73%.

The rate of financial profitability involves two main economic indicators: net profit and equity condition.



**Figure no. 2** The level of financial profitability rate

Source: the author's own concept

Analyzing the data presented in the previous graph, we can notice that all the analyzed companies presented fluctuating evolutions of financial profitability in the period 2013-2019. In 2019, S.C. ALUM S.A. obtained the highest ROE value of 19.89%, and S.C. ALRO S.A. had the least value. Regarding the results obtained in 2018, the highest levels were reached by the companies S.C. ALRO S.A. and S.C. ALUM S.A., respectively 18.46% and 17.61%. The highest value of this rate was 23.03% being recorded by S.C. ALRO S.A. in 2017.

SC ALRO S.A. registered an increasing evolution from 2015 to 2017, when the company reached the maximum value of this indicator, due to the increase of the net profit by 373% compared to 2016, the equity increasing by 22%. In 2018, the rate level decreases to 18.46% due to the decrease of net profit by 29%, as well as the decrease of equity by 11%. The ROE level in 2013, 2014, 2015 and 2019 was 0, because the company did not make a profit.

SC ALUM S.A. reached the maximum value of this indicator in 2019, respectively 19.89%, and the minimum value of 2.45% was registered in 2015, except for 2013 and 2016 when the company did not register a profit. In 2015, the company registered a considerable decrease of ROE, the main cause being the decrease of the net profit by 87% in 2015 compared to 2014, and the own capital increasing by 3%.

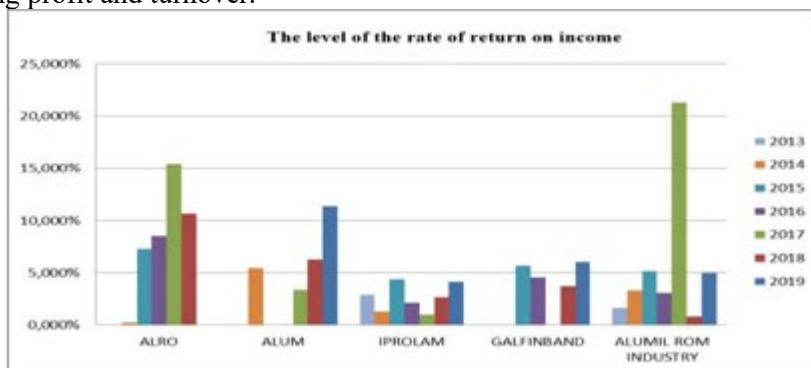
SC IPROLAM S.A. had values of the relatively constant rate of financial profitability in the period 2014-2019, the fluctuations being between 0.41% and 0.76%. The company registered a sudden decrease of this indicator in 2014, mainly determined by the decrease of the net profit by 93% in 2014 compared to 2013.

SC GALFINBAND S.A. presented close values of financial profitability in 2015-2016 and 2018-2019, the maximum value being reached in 2015 of 3.81%, and the

minimum value in 2018 of 1.87%, except for the years 2013, 2014 and 2017 when the company does not obtained net profit.

SC ALUMIL ROM INDUSTRY S.A. presented fluctuating values of financial profitability between 0.79% in 2013 and 4.50% in 2019. Exceptions to these relatively close fluctuations are: 2017 when the company had a remarkable increase in this indicator, reaching the maximum value of 19.77% due to the increase of the net profit by 11,419,703 lei in 2017 compared to the previous year, as well as the increase of the own capital by 12,647,643 lei. The year 2018 is another exception considering the fact that the company registered a sudden decrease of this indicator compared to the previous year, generated by the decrease of both the net profit by 56.38% and the equity by 19.50%.

The rate of return on income is summarized in the following economic indicators: operating profit and turnover.



**Figure no. 3** The level of the rate of return on income

*Source: the author's own concept*

In accordance with the previous chart, it is found that all the analyzed companies showed fluctuating trends of income profitability in the period 2013-2019. In 2019, ALUM reached the maximum value of the indicator of 11.39%. Regarding the results obtained in 2018, the highest level was achieved by the company ALRO, respectively 10.69%, and the lowest value was that of 0.82% marked by S.C. ALUMIL ROM INDUSTRY S.A. The highest level of this type of rate was 21.29% being obtained by S.C. ALUMIL ROM INDUSTRY S.A. in 2017.

SC ALRO S.A. registered an increasing evolution from 2014 to 2017, when the company reached the maximum value of 15.43% of this indicator, due to the increase of the operating profit by 210% compared to 2016, the turnover increasing by 16%. In 2018, the rate level decreases to 10.69% due to the decrease of the operating profit by about 27%, as well as the increase of the turnover by 5%. The ROS level in 2013 and 2019 was 0, because the company did not make a profit from operation.

SC ALUM S.A. reached the maximum value of this indicator in 2019, respectively 11.39%, and the minimum value of 3.39% was registered in 2017, except for the years 2013, 2015 and 2016 when the company did not register an operating profit. In 2019, the company registered a significant increase of ROS, due both to the increase of the operating profit by approximately 63% compared to 2018, and to the decrease of the turnover by 11%.

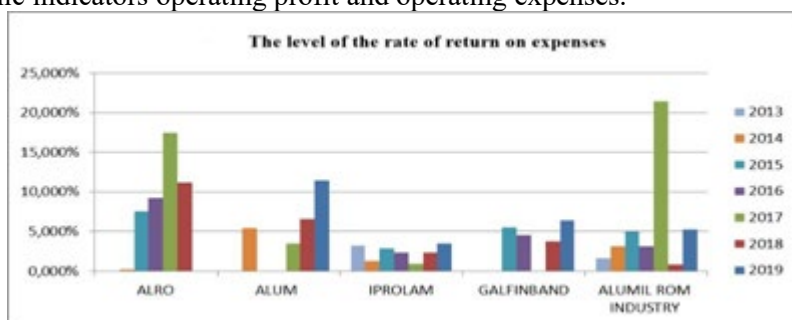
SC IPIROLAM S.A. registered a fluctuating evolution of the income profitability rate in the analyzed period, 2013-2019. The lowest level of the indicator was reached in 2017 with a minimum value of 1%, and the maximum value of 4.36% was registered in

2015, determined by the decrease of the turnover by 9,179,837 lei and the increase of the profit from operation with 153,735 lei.

SC GALFINBAND S.A. presented close values of the income profitability rate in 2015-2016 and 2018-2019, the maximum value being reached in 2019 of 6.06%, and the minimum value in 2018 of 3.71%, except for the years 2013, 2014 and 2017 when the company did not make a profit from the operation.

SC ALUMIL ROM INDUSTRY S.A. presented fluctuating values of financial profitability between 0.82% in 2018 and 21.29% in 2017. In 2017 the company registered a substantial increase of this indicator, reaching the maximum value of 21.29% due to the increase in operating profit by 12,966,843 lei compared to the previous year, as well as the increase of the turnover by 11,295,074 lei. The year 2018 was marked by a significant decrease of this indicator compared to the previous year, generated by the decrease of the operating profit by about 95% and by the increase of the turnover by 36%.

The rate of return on expenditure is determined on the basis of the following economic indicators operating profit and operating expenses.



**Figure no. 4** The level of the rate of return on expenses

Source: the author's own concept

According to the data presented in the graph, we can notice that the analyzed companies showed fluctuations in the profitability of expenses during the analyzed period. In 2019 the company that had the highest level of this indicator was S.C. ALUM S.A. (11.43%). In 2018 the highest value was 11.18%, registered by the company S.C. ALRO S.A., and the lowest value was the one marked by the company S.C. IPROLAM S.A. of 0.82%. The highest value of this rate was 21.41% being recorded by S.C. ALUMIL ROM INDUSTRY S.A. in 2017.

SC ALRO S.A. registered fluctuating values of this rate, registering an ascending evolution from 2014 to 2017, when it reached the maximum value of 17.48%, as a result of the increase of the operating profit by 200,738,472 lei, the operating expenses increasing only by 213,278,683 lei. In 2018, the value of the indicator decreased to 11.18%, because the operating profit decreased by 27%, and the operating expenses increased by 14%.

SC ALUM S.A. registered an ascending evolution in the period 2017-2019, the last year analyzed being the one in which the company reached the maximum value of this indicator, namely 11.43%, due to the increase of operating profit by 62.66%, as well as the decrease of expenses from operation by 7.04% compared to 2018. At the level of 2013, 2015, 2016, the level of the rate of return on expenses registered zero values, as the company did not make a profit from operation.

SC IPROLAM S.A. was marked by increases and decreases of this indicator during the analyzed period. The fluctuations of this rate were between the minimum value

of 0.93% reached in 2017 and the maximum value of 3.50% obtained in 2019. From 2015 the rate level decreased until 2017, as a result of the decrease in operating profit in a higher rate of decrease in operating expenses.

SC GALFINBAND S.A. presented a relatively constant evolution of this indicator, registering fluctuations between 3.77% and 6.40%, except for the years 2013, 2014 and 2017 when it had zero values, as the company did not obtain a profit from operation.

SC ALUMIL ROM INDUSTRY S.A. recorded a significant increase in the rate of return on expenses in 2017, when it reached the maximum value of 21.41%, the effect of increasing the operating profit by 12,966,843 lei compared to 2016 and operating expenses of 12,304,891 lei. In 2018 the company was marked by a sudden and substantial decrease in the level of this rate to 0.82%, which was caused by the massive decrease in operating profit by 94.7% and the increase in operating expenses by 38% compared to year 2017.

The level of the operating lever coefficient used to assess the operating risk is reflected in table 1.

**Table 1. The level of the operating lever coefficient**

Year	Elements	ALRO	ALUM	IPROLAM	GALFINBAND	ALUMIL ROM INDUSTRY
2019	CLE	42,80	-5,96	0,45	42,27	-11,45
2018		-5,10	4,09	-0,67	#DIV/0!	-2,61
2017		6,92	#DIV/0!	0,03	4,97	37,55
2016		-1,05	#DIV/0!	-0,49	-1,97	17,33
2015		256,12	-5,43	-1,29	#DIV/0!	-1,40
2014		#DIV/0!	#DIV/0!	1,44	#DIV/0!	43,29

*Source: the author's own concept*

During the analyzed period, the highest level of operating leverage was recorded by the company S.C. ALRO S.A. namely 256.12, which indicates a very high operational risk, because in case of decrease of production sold on the market, the profit will register a higher percentage decrease.

For S.C. ALRO S.A. the level of operating leverage in 2019 was 42.80, reaching 256.12 in 2015, which indicates an unstable situation for the company and a high economic risk. In 2016 and 2018, the leverage ratio becomes negative, so it no longer has economic significance. In 2019, this coefficient could not be calculated, because the company did not register an operating profit.

In the case of S.C. ALUM S.A. it is noted that in 2018 it had a CLE of 4.09 which reflects a comfortable situation for society and a low economic risk, ie a lower percentage reduction of profit when the production sold decreases, the company approaches the threshold of profitability. For the years 2014, 2016 and 2017 this indicator could not be determined, as the company did not make a profit from operation; and in 2015 and 2019 CLE had negative values that do not show economic significance.

For S.C. IPROLAM SA the leverage coefficient was 1.44 in 2014, 0.03 in 2017 and 0.45 in 2019, in these years the company was in a comfortable situation, associated with a low economic risk, respectively a reduction lower percentage of profit when the production sold decreases (the company approaches the break-even point more slowly). CLE becomes negative in 2015, 2016 and 2018 and no longer has economic significance. This was due to the evolution in different directions of operating profit and turnover.



S.C. GALFINBAND S.A. registered in 2017 a CLE level of 4.97 which indicates a low economic risk and a comfortable situation for the company, but in 2019 it had the value of 42.27 the company, thus reaching an unstable situation and with a high economic risk. At the level of 2014, 2015 and 2018, the CLE could not be determined, due to the fact that the company did not register a profit from operation, and in 2016 it became negative (-1.97).

The operating leverage ratio of S.C. ALUMIL ROM INDUSTRY S.A. it does not show any economic significance in 2015, 2018 and 2019, because it had negative values (-1.40; -2.61; -11.45). In the years in which it could be calculated, respectively 2014, 2016 and 2017 it had very high values (43.29; 17.33; 37.55) presenting an unstable situation for the company and a high economic risk, thus, in case of decrease production sold on the market, the profit will register a higher percentage decrease (the company is closer to the break-even point).

The level of the financial leverage ratio used to assess the operating risk is reflected in table 2.

**Table 2. The level of the financial leverage**

Year	Elements	ALRO	ALUM	IPROLAM	GALFINBAND	ALUMIL ROM INDUSTRY
2019	CLF	1,00	0,65	-0,36	0,64	1,07
2018		1,07	1,96	-1,38	#DIV/0!	1,01
2017		3,38	#DIV/0!	8,15	1,00	1,27
2016		#DIV/0!	#DIV/0!	-0,10	0,73	1,01
2015		#DIV/0!	0,87	0,58	#DIV/0!	1,03
2014		#DIV/0!	#DIV/0!	1,16	#DIV/0!	1,88

*Source: the author's own concept*

For S.C. ALRO S.A., the financial leverage ratio reached values between 1 and 3.38, which reflects a low financial risk, as a result of the less accentuated decrease of the net profit with the decrease of the exploitation result. For the period 2014-2016 CLF cannot be calculated, as the company did not make a net profit.

In the case of S.C. ALUM S.A., the financial leverage ratio was 0.87 in 2015, 1.96 in 2018 and 0.65 in 2019, respectively, values that indicate that the company has a low financial risk. For the years 2014, 2016 and 2017 this indicator cannot be determined, because the company did not make an operating profit, respectively a net profit.

For S.C. IPROLAM SA, the financial leverage ratio presented values between 0.58 and 8.15, the company's situation being associated with a low financial risk, and in 2016, 2018 and 2019 it becomes negative (-0.10; -1.38; 0.36) and no longer has economic significance.

S.C. GALFINBAND S.A. recorded CLF values of 0.73 in 2016 and 0.64 in 2019, a level that means that the company has a low financial risk. In 2017, this indicator had the value of 1, a unit value generated both by the decrease of the operating profit and of the net profit.

SC ALUMIL ROM INDUSTRY S.A. reached during the analyzed period, values of the financial leverage coefficient between the minimum of 1.01 registered in 2016 and

the maximum of 1.88 obtained in 2014. The CLF values obtained over the entire analyzed interval are low, which presents a financial risk low of the company.

**Table 3. Analysis of the correlation between profitability and risk**

Profitability indicators	Pearson correlation coefficient	Economic rate of return (ROA)	Rate of financial profitability (ROE)	Rate of return on income	Rate of return on expenditure	CLE	CLF
Economic rate of return (ROA)	Pearson Correlation	1	.978(**)	.840(**)	.847(**)	-.625	.641
	Sig. (2-tailed)		.000	.000	.000	.510	.585
	N	35	35	35	35	23	21
Rate of financial profitability (ROE)	Pearson Correlation	.978(**)	1	.804(**)	.816(**)	-.681	.728
	Sig. (2-tailed)	.000		.000	.000	.484	.535
	N	35	35	35	35	23	21
Rate of return on income	Pearson Correlation	.840(**)	.804(**)	1	.996(**)	.519	.439
	Sig. (2-tailed)	.000	.000		.000	.578	.871
	N	35	35	35	35	23	21
Rate of return on expenditure	Pearson Correlation	.847(**)	.816(**)	.996(**)	1	.637	.316
	Sig. (2-tailed)	.000	.000	.000		.577	.777
	N	35	35	35	35	23	21
CLE	Pearson Correlation	-.625	-.681	.519	.637	1	.022
	Sig. (2-tailed)	.510	.484	.578	.577		.925
	N	23	23	23	23	23	21
CLF	Pearson Correlation	.641	.728	.439	.316	.022	1
	Sig. (2-tailed)	.585	.535	.871	.777	.925	
	N	21	21	21	21	21	21

*Source: the author's own concept*

The analysis of the correlation between profitability and risk at the level of companies in the metallurgical industry leads us to the following conclusions:

-there is a significant inverse correlation between roa, roe and cle and a significant direct correlation between ros, rrc and cle.

-at the level of the correlation between the profitability and the financial leverage coefficient, the situation shows us a significant direct correlation between roa, roe and clf, and between ros, rrc and clf the intensity of the correlation decreasing in value.

We can therefore say that between profitability and operating and financial risks there are significant correlations, as in any field depending on the analyzed periods and economic circumstances these correlations being direct, ie a high return a high or inverse risk, increasing profitability and risk in decrease or increase risk and decrease profitability.

## 5. CONCLUSIONS

In the analysis of the correlation between profitability and risk in the metallurgical industry, it was necessary to determine with priority the following elements: economic rate of return, financial rate of return, operating leverage ratio and financial leverage ratio.

From the analysis of the economic profitability rate, the most relevant conclusions we have reached are presented below: in 2019 the company that had the highest level of this indicator was S.C. ALUM S.A. (14.96%), and the one that reached the lowest level of the rate was S.C. ALRO S.A. At the level of 2018, the highest value was 12.20%, registered by the company S.C. ALUM S.A., and the lowest value was the one marked by the company S.C. IPROLAM S.A. of 0.58%.

From the analysis of the financial rate of return, we obtained the following more important conclusions: in 2019, S.C. ALUM S.A. obtained the highest ROE value of 19.89%, and S.C. ALRO S.A. had the least value. Regarding the results obtained in 2018, the highest levels were reached by the companies S.C. ALRO S.A. and S.C. ALUM S.A., respectively 18.46% and 17.61%. The highest value of this rate was 23.03% being recorded by S.C. ALRO S.A. in 2017.

From the CLE analysis, we reached the following conclusions: for S.C. ALRO S.A. the level of operating leverage in 2019 was 42.80, reaching 256.12 in 2015, which indicates an unstable situation for the company and a high economic risk. In 2016 and 2018, the leverage ratio becomes negative, so it no longer has economic significance. In the case of S.C. ALUM S.A. it is noted that in 2018 it had a CLE of 4.09 which reflects a comfortable situation for society and a low economic risk, ie a lower percentage reduction of profit when the production sold decreases, the company approaches the threshold of profitability.

From the CLF analysis, we reached the following conclusions: for S.C. ALRO S.A., the financial leverage ratio reached values between 1 and 3.38, which reflects a low financial risk, as a result of the less accentuated decrease of the net profit with the decrease of the exploitation result. In the case of S.C. ALUM S.A., the financial leverage ratio was 0.87 in 2015, 1.96 in 2018 and 0.65 in 2019, respectively, values that indicate that the company has a low financial risk. For S.C. IPROLAM S.A., the financial leverage ratio presented values between 0.58 and 8.15, the company's situation being associated with a low financial risk. SC ALUMIL ROM INDUSTRY S.A. reached during the analyzed period, values of the financial leverage coefficient between the minimum of 1.01 registered in 2016 and the maximum of 1.88 obtained in 2014. The CLF values obtained over the entire analyzed interval are low, which presents a financial risk low of the company.

The analysis of the correlation between the economic rate of return, the financial rate of return, the operating leverage ratio and the financial leverage ratio in the

metallurgical industry was performed using the SPSS statistical program, the correlation index used being the Pearson index. As a result of the analysis of the correlation between profitability and risk in the metallurgical industry in Romania, we found that:

-there is a significant inverse correlation between roa, roe and cle and a significant direct correlation between ros, rrc and cle.

-at the level of the correlation between the profitability and the financial leverage coefficient, the situation shows us a significant direct correlation between roa, roe and clf, and between ros, rrc and clf the intensity of the correlation decreasing in value.

We can therefore say that between profitability and operating and financial risks there are significant correlations, as in any field depending on the analyzed periods and economic circumstances these correlations being direct, ie a high return a high or inverse risk, increasing profitability and risk in decrease or increase risk and decrease profitability.

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