ANALYSIS OF THE CORRELATION BETWEEN FINANCIAL STANDING AND ECONOMIC AND FINANCIAL PERFORMANCE IN ROMANIAN COMPANIES

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Abstract.

In a more and more competitive and dynamic business environment, a company must pay attention to its own financial standing and performance, as well as the interdependences between these indicators. To this purpose, statistical and mathematical techniques have been used for studying the nature, direction and intensity of the correlations between financial standing indicators and economic and financial performance in Romanian companies listed on the Bucharest Stock Exchange. The study refers to 5 years (2007-2011) and is based on the accounting and financial statements of 15 Romanian companies, operating in various industries. The analysis was based on two methods: the chain substitution method and the statistical correlation method, based on the Pearson index.

Keywords: return on assets, liquidity, financial stability, asset rotation, trade return

JEL classification: C01, C15, G01.

1. Introduction

The analysis of a company's financial standing and performance is a core element of studies in financial management and analysis. Any report

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analysing a company's activity includes elements relating to these two objectives. Moreover, the International Accounting Standards have established that the purpose of financial statements it to provide information on an entity's financial standing, financial performance and cash flow, as they are useful for a wide range of decision markers. [IAS 1].

Information on changes in the financial standing refer to the evaluation of the operating, funding and investment activity in the reporting period, lying at the basis of an assessment on a company's capacity to generate cash or cash equivalents. The measurement of a company's economic and financial performance refers to the results of the company's resource management.

Even though Romanian companies, but not only, have lately been affected by the economic and financial crisis, it is important to know up to which extent their activity was affected, both in terms of financial standing and performance.

2. Concepts and Methodology

A company's financial standing is presented by means of the balance sheet and refers to the relation between its assets, debts and equity. This being said, a company's financial standing is influenced by its economic resources, financial structure, liquidity, solvability, as well as its capacity of adjustment to the changes of the business environment.

The indicators used for assessing the financial standing include: financial structure indicators (financial autonomy, financial stability, financial leverage), liquidity and solvability indicators, as well as indicators based on the working capital and the net cash.

A company's economic and financial performance is assessed in direct connection with results, with the extent of achievement of goals. The specialised literature does not include a unitary vision on performance: one may find either customised (specific) definitions thereof, either general definitions.

According to M. Porter, a company's capacity depends on its capacity to create value for its customers [Porter M., 1986].

A. Bourguignon [1995] defines performance as reflecting the achievement of the company's goals. Elie Cohen [1995] equals performance to efficiency, referring to the company's results, in comparison to resources. Philippe Lorino [1995] states that a company's performance contributes to

improving the value-cost binomial, not only to reducing costs or increasing value. C. Marmuse [Paris, 2000] considers that performance allows for a long-term distancing from competitors, by means of a strong motivation (based on incentive systems) of all the company's members.

Economic and financial performance may be measured by indicators such as: output indicators (turnover, added value, profit), profitability indicators (the economic rate of return, the financial rate of return, the trading rate of return), efficiency indicators (labour productivity, equipment output).

Out of the indicators used for measuring economic and financial performance, this study deals with the return on assets (ROA), as it best reflects the interests of the company's managers and creditors. This rate is calculated by referring the net profit (Pn) to the total assets in the balance sheet (At). The idea is taken from Helfert A. Erich [2006]:

$$ROA = \frac{Pn}{At} x100 \tag{1}$$

In order to show the correlation between a company's position and economic and financial performance, a range of additional items, taken from the balance sheet or the profit and loss account have been introduced: current assets (AC), short term debt (Dts) and turnover (CA):

$$ROA = \frac{AC}{Dts} x \frac{Dts}{At} x \frac{CA}{AC} x \frac{Pn}{CA} x100$$
(2)

$$ROA = Lcx(1 - Rsf)xNrxRcom$$
(3)

Where: Lc – the rate of current liquidity;
   Rsf – the rate of financial stability;
   Nr – the average asset rotation of current assets;
   Rcom – the trade rate of return (profit margin).

This factorial analysis model can explain the variation in the economic rate of return, as an indicator of economic and financial performance, depending on the variation of three financial position indicators (Lc, Rsf and Nr). The influence of these factors may be measured by means of chain substitution, as follows:

1. The influence of the rate of current liquidity:

$$\Delta_{ROA}^{Lc} = (Lc_1 - Lc_0)x(1 - Rsf_0)xNr_0xRcom_0$$

(4)

2. The influence of the rate of financial stability:

$$\Delta_{ROA}^{Rsf} = -Lc_1x(Rsf_1 - Rsf_0)xNr_0xRcom_0$$

(5)

3. The influence of the average asset rotation:

$$\Delta_{ROA}^{Nr} = Lc_1x(1 - Rsf_1)x(Nr_1 - Nr_0)xRcom_0$$

(6)

4. The influence of the trade rate of return:

$$\Delta_{ROA}^{Rcom} = Lc_1x(1 - Rsf_1)xNr_1x(Rcom_1 - Rcom_0)$$

(7)

The correlation between financial standing and economic and financial performance was subsequently followed by means of the Pearson index, calculated with the SPSS software.

The analysis referred to a sample of 15 companies listed on the Bucharest Stock Exchange, representing various industries, such as: extracting industry (Dafora, Foraj sonde Craiova, OMV Petrom); processing industry (Albalact, Bermas, Antibiotice, Artego, TMK Artrom Slatina, Armătura, Azomureş); electricity, thermal energy and gas (Transelectrica, Transgaz); constructions (Condmag, Transilvania Construcţii); and wholesale trade, repair of motor vehicles, motorbikes and household appliances (Alumil Rom SA).

The period considered for the analysis, both by means of the chain substitution method and the correlation with the Pearson index is 5 years (2007-2011). The accounting documents used were the balance sheet and the profit and loss statement of the analysed companies.

3. **Case Study**

The variation in the return on assets depending on financial standing and economic and financial performance indicators, for the companies included in the case study, was analysed for the period 2007-2011, for timeframes equal to a tax year.

Appendix no. 1 includes the results obtained for the 15 companies, by periods.

The obtained results show that in the extracting industry, the influence of general liquidity on the return on assets was mainly unfavourable, as general liquidity decreased from one year to another, especially during 2008-2010. In terms of liquidity, the situation seems to improve in 2011, but this only happens in Dafora S.A. In terms of intensity, one may say that values are close only for Foraj sonde Craiova and OMV Petrom, with a less influence in Dafora.

The formulae show that the financial stability rate is inversely proportional to the return on assets: the higher the rate of financial stability, the lower the return on assets. Hence, one might say that the rate of financial stability has a negative influence on the return on assets in the first timeframe, in two of the three companies: Dafora S.A. and Foraj Sonde Craiova. The situation does not change in the immediately following period, when the influence becomes positive in Dafora and negative for the other two companies in the sector. The last timeframe, 2010-2011, shows that the return on assets has decreased, as influenced by the rate of financial stability. The situation is only favourable in Foraj Sonde Craiova.

The influence of the asset rotation is proven to be favourable only in the two last timeframes, when it contributes to increasing the return on assets both for Foraj Sonde and OMV Petrom. On the whole, the asset rotation had a negative influence on the ROA, as this indicator decreased from one timeframe to another.

The trade rate of return is unfavourable during 2008-2011 only for Foraj Sonde Craiova. The two other companies present an increase in the return on assets, due to this rate, most of the time.

In terms of the processing industry, one may say that a favourable situation is found in 4 of the 7 selected companies, in three of the four investigated timeframes. Liquidity contributes to an increase in the return on assets. A critical situation is seen in Albalact, Antibiotice and TMK Artrom, where the general liquidity decreases from one period to another, also

determining the decrease of ROA. The situation seems to improve in 2010-2011 only for Albalact, when the increase in general liquidity also determined an increase in the return on assets.

As for the rate of financial stability, it may be said that Albalact shows a favourable influence, as the return on assets increases due to the rate of financial stability for the entire timeframe. A favourable situation is also seen in Bermas and Artego, where ROA decreases under influence of the rate of financial stability during 2008-2010. We might say this is normal, if referring to the economic conditions of that time.

An unfavourable influence of the rate of financial stability is found in Armatura and Azomures, where the return on assets decreases under influence of the rate of financial stability most of the time.

The average asset rotation of current assets also indicates a more favourable situation for Albalact than other companies. Only the period 2009-2010 is unfavourable. A critical situation is found in Antibiotice, where the return on assets decreases under influence of the average asset rotation, both in the first two and the last timeframe.

On the whole, this indicator provides a favourable contribution to the evolution of ROA.

Regarding the results obtained for the influence of the trade rate of return upon ROA, we may say that the situation is favourable in Bermas, Artego and TMK Artrom, even similar, as the trade rate of return contributes to decreasing the return on assets only in the first period (2007-2008). The situation may also be considered favourable in the other companies, as the unfavourable influence in a period is compensated by the favourable influence in the subsequent period. The period 2008-2009 is difficult, even though, considering the economic and financial crisis, the situation may be justified. The return on sales is decreasing for all the companies in the field, with a corresponding decrease in the return on assets.

Alumil Rom Industry S.A. represents wholesale and retail trade of metal parts. Analysing the factorial influences of financial standing and economic and financial performance indicators, several essential conclusions may be drawn. In terms of the influence of general liquidity, one may say that the situation is more than favourable, as it contributes to the increase in the return on assets for 2008-2011.

The influence of the rate of financial stability is negative, as it contributes to the decrease of the return on assets. The situation may also be

justified by the instability of the company's business environment, as the rate of financial stability increases from one year to another.

The average asset rotation of current assets and the trade rate of return have similar influences from one period to another, as they oscillate from unfavourable to favourable influences along the entire timeframe.

Pursuant to the results obtained in electricity, thermal energy and gas industry (Transelectrica and Transgaz), several information was collected on the influences of the four indicators, as follows: the general liquidity has an unfavourable influence for all the time in Transelectrica and for the first two timeframes in Transgaz; the rate of financial stability acts inversely to the general liquidity, as it has a negative influence on the return on assets in Transgaz for the entire period and oscillates from un favourable to favourable in Transelectrica; the average asset rotation shows a similar situation in both companies, only differing in timeframe, as it diminishes in the first and last timeframe in Transelectrica and the last two timeframes in Transgaz; the trade rate of return has a negative influence on ROA in 2008-2010 in Transelectrica and 2007-2008, respectively 2010-2011 in Transgaz.

As for the construction sector, it may be said that the general liquidity has an unfavourable influence in both companies during 2008-2010. Due to the decrease from one year to another, this results in the decrease of the return on assets both for Condmag and Transilvania Constructii.

Condmag has a decrease of ROA determined by the rate of financial stability in the first and last period, whereas Transilvania Constructii in the first two periods.

In terms of the average asset rotation of current assets, it may be said that the two companies have a similar situation. On the whole, this indicator contributes to the decrease of the return on assets. A difference is found in Transilvania Constructii, where the average asset rotation decreases for the entire period, with a negative influence on ROA.

The influence of the trade rate of return is different from one company to another: it is favourable in the first periods in Condmag and in the last period in Transilvania Constructii.

As mentioned in the methodology, the paper continues with an analysis on the correlation between financial standing indicators and economic and financial performance indicators, i.e. the correlation between the return on assets (as a performance indicator) and financial standing rates (general

liquidity, the rate of financial stability and the average asset rotation of current assets).

Moreover, the results obtained when measuring the correlation between indicators and the influence of factors through chain substitution were centralised in a table, as follows:

Table 1: The Correlation Between Financial Standing Indicators and Economic and Financial Performance Indicators

Period		2007 – 2011			
Correlations		ROA - Lg	ROA - Rsf	ROA - Nr	ROA - Rcom
Dafora	correl	**-0.777**	**-0.961**	**0.531**	**0.880**
	sig.	0.122	0.009	0.357	0.049
Foraj sonde Craiova	correl	**0.196**	**-0.824**	**0.655**	**0.711**
	sig.	0.752	0.087	0.231	0.178
OMV Petrom	correl	**-0.153**	**0.249**	**0.054**	**0.957**
	sig.	0.806	0.687	0.932	0.010
Albalact	correl	**0.367**	**-0.016**	**-0.242**	**0.942**
	sig.	0.547	0.98	0.695	0.017
Bermas	correl	**0.963**	**0.994**	**0.373**	**0.993**
	sig.	0.009	0.001	0.536	0.001
Antibiotice	correl	**0.909**	**0.779**	**0.905**	**0.998**
	sig.	0.033	0.121	0.035	0.001
Artego	correl	**0.862**	**0.856**	**0.878**	**0.994**
	sig.	0.600	0.640	0.500	0.001
TMK - Artrom Slatina	correl	**0.432**	**0.305**	**0.484**	**0.985**
	sig.	0.467	0.617	0.408	0.002
Armatura	correl	**-0.451**	**-0.167**	**0.569**	**0.987**
	sig.	0.446	0.789	0.317	0.002
Azomures	correl	**0.915**	**0.939**	**-0.381**	**0.990**
	sig.	0.029	0.018	0.527	0.001
Alumil Rom Industry	correl	**-0.782**	**-0.710**	**-0.091**	**0.995**

	sig.	0.118	0.179	0.884	0.001
Transelectrica	**correl**	**-0.034**	**-0.244**	**0.693**	**-0.654**
	sig.	0.957	0.693	0.194	0.231
Transgaz	**correl**	**-0.139**	**0.549**	**0.479**	**0.869**
	sig.	0.823	0.338	0.414	0.056
Condmag	**correl**	**0.188**	**0.021**	**0.299**	**0.973**
	sig.	0.762	0.974	0.625	0.005
Transilvania Constructii	**correl**	**-0.684**	**-0.823**	**0.932**	**0.905**
	sig.	0.203	0.087	0.021	0.035

Source: Author-processed table, based on data obtained in SPSS

Considering the correlations obtained between financial standing indicators and economic and financial performance indicators, several essential conclusions may be drawn regarding the relation between them.

In the case of extracting industry, a strong correlation is found between the economic rate of return and the rate of general liquidity, only in Dafora S.A., where a strong inverse correlation is found. Correlations are low in Foraj Sonde Craiova and OMV Petrom, but, however, sig is high.

As for the correlation between ROA and the rate of financial stability, the correlation is strong and inverse in two of the three companies: Dafora and Foraj Sonde Craiova. As with the chain substitution method, the ratio between the return on assets and the financial stability is inverse.

The correlation between ROA and the average asset rotation of current assets also shows strong and direct correlation in Dafora and Foraj Sonde Craiova, which was also confirmed by the chain substitution method, when these two indicators were directly proportional.

As for the results obtained in processing companies, the situation is different. 4 of the 7 companies (Bermas, Antibiotice, Artego and Azomures) show a strong and direct correlation between ROA and Lg, as confirmed by the chain substitution. The correlation is low and direct in Albalact and TMK Artrom Slatina. The only contradictory situation is found in Armatura.

However, the situation is contradictory with the correlation between ROA and Rsf, where the results confirm that they have a strong direct

correlation, unlike the chain substitution method, which resulted in an inverse relation. This is seen in the same companies as with the ROA-Lg correlation. The correlation is only inverse (though with an insignificant value) in Albalact and Armatura.

In terms of the correlation between ROA and the average asset rotation of current assets, a strong direct correlation is found in Antibiotice, Artego and Armatura; a direct, but lower correlation in Bermas and TMK Artrom Slatina; and a distinct situation in Albalact and Azomures, with an inverse, low correlation.

As for Alumil Rom Industry SA, the situation is only confirmed for the ROA - Rsf correlation, where a strong inverse correlation is found. However, a contradictory situation is found in the correlation of ROA – Lg (negative, though strong).

In Transelectrica and Transgaz, the correlation is observed only with the relation between ROA and the general liquidity, where a strong and direct correlation is found. A special situation is found in Transgaz with the correlation between ROA and Rsf, with a strong direct correlation, as well as the correlation between ROA – Rcom, which is not confirmed by the chain substitution method.

In the construction sector, strong correlations are found between financial standing and performance indicators only in Transilvania Constructii. In the case of the ROA-Lg correlation, the situation is different from the chain substitution method, as the two indicators show a strong, but inverse correlation.

The correlation between the economic rate of return and financial stability is strong and inverse, as confirmed by both methods. A similar situation arises in the case of the correlation between ROA and the average asset ratio for current assets, where a strong direct correlation is found.

Based on the relations obtained for each company, it may be said that strong correlations (direct or inverse) were found in most companies, between financial standing and economic and financial performance indicators.

4. Conclusions

The period selected for the research study proved to be a rather representative one, as it included both a timeframe prior to the economic and financial crisis and the immediately subsequent period.

This unwanted economic event was best analysed by looking at financial standing and economic and financial performance. A thing became clear from the start: the evolution of these indicators would mark the negative effects of the crisis. Was there any correlation between these financial standing and economic and financial performance indicators? What was its direction? This could not be investigated and proven without a research basis, i.e. the 15 companies listed on the Bucharest Stock Exchange.

Pursuant to the analysis, starting from the factorial analysis of the return on assets and resorting the chain substitution method and the Pearson correlation coefficient calculated by SPSS, several important conclusions could be made, as follows:

- financial standing and economic and financial performance indicators have both direct (general liquidity, average asset rotation) and indirect influence (financial stability);

- the period 2008-2010 proved to be a critical one in most analysed companies, as financial standing and economic and financial performance were affected by the economic crisis;

- the rate of financial stability increased in most companies during the crisis, which resulted in a decrease of the return on assets;

- correlations established by means of the statistical programme proved to be strong in most companies, confirming the results of the chain substitution method.

From our point of view, pursuant to all these analyses in terms of financial standing and economic and financial performance indicators, it may be said that a close connection exists between these indicators. They even condition one another. A favourable financial standing is not possible if the company in question is not performing well.

4. References

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Periods	2007-2008	2008-2009	2009-2010	2010-2011
Companies	Dafora			
Lg	0,007837834	-0,00021064	-0,00000065	0,000484474
Rsf	-0,017181935	0,000211931	0,00007450	-0,001174414

Nr	-0,00186713	-0,000923819	0,000262733	-0,001894085
Rcom	-0,028498162	0,001877922	0,014667318	-0,010877664
	Foraj sonde Craiova			
Lg	-0,001465742	0,004681297	-0,002608868	-0,00354014
Rsf	-0,034646648	-0,016971663	-0,000672195	0,00118345
Nr	-0,052010634	-0,026098536	0,005131664	0,0047789
Rcom	0,078638026	-0,064749261	-0,022763186	0,048935222
	OMV Petrom			
Lg	-0,011128462	-0,005523631	-0,001920091	-0,00389
Rsf	0,004147119	-0,002255062	0,003281851	-0,001338351
Nr	0,019982964	-0,003891624	-0,005934623	0,012800224
Rcom	-0,056331131	0,021918943	0,009834872	0,046544541
	Albalact			
Lg	-0,010005903	-0,000578905	-0,000520691	0,000197595
Rsf	0,003676059	0,000452587	0,003385701	0,000180811
Nr	0,007741961	0,000507405	-0,001453344	0,000122836
Rcom	-0,019308509	0,010073696	-0,01237651	0,023080131
	Bermas			
Lg	-0,036920423	0,003441939	0,009527886	0,004890799
Rsf	0,026531778	-0,003008131	-0,008060156	0,002123172
Nr	-0,006993141	0,003493472	0,004210908	-0,014602338
Rcom	-0,050508967	0,019901103	0,013907464	0,001856025
	Antibiotice			
Lg	-0,012782041	-0,00169091	0,001899497	-0,001038459
Rsf	0,01751249	0,003131348	-0,002307848	0,003210135
Nr	-0,015851051	-0,001563325	0,002399068	-0,001817317
Rcom	-0,05425106	0,00305839	-0,001713027	0,012900826
	Artego			
Lg	-0,012134587	0,000368106	-0,001074548	0,001301012
Rsf	0,021847076	-0,000581525	-0,00031717	0,000584052
Nr	-0,025547286	-0,001321584	0,001458019	0,001561624
Rcom	-0,078051325	0,009560847	0,002098404	0,009082415
	TMK Artrom			
Lg	0,003471455	-0,083438288	-0,0066917	-0,001644331
Rsf	-0,002668868	0,083931915	0,006541001	0,001854804
Nr	0,004706846	0,024250133	-0,02244314	-0,002010607
Rcom	-0,109202237	0,010592816	0,049778245	0,090642583

	Armatura			
Lg	0,013406234	0,013644031	-0,304592124	0,039925587
Rsf	-0,019312311	-0,013406967	0,305090366	-0,050345373
Nr	0,007692652	0,007553977	-0,005856043	-0,027785143
Rcom	0,08009177	-0,104532328	-0,090891643	0,185169429
	Azomures			
Lg	-0,000031	0,004488561	0,005700456	0,106492221
Rsf	0,006766	-0,000140133	-0,00715679	-0,074513759
Nr	0,017764453	-0,036606385	0,001582103	-0,03361584
Rcom	-0,046617246	-0,039276788	0,145131572	0,12028451
	Alumil Rom			
Lg	-0,011602401	0,039363997	0,032347253	0,005302025
Rsf	0,013627852	-0,053230718	-0,035554882	-0,004285847
Nr	-0,011193628	0,024032574	-0,012903742	0,000616336
Rcom	-0,039454457	0,004508813	-0,045875924	0,01381733
	Transelectrica			
Lg	-0,000120058	-0,000132685	-0,0000971	-0,000129855
Rsf	-0,002039553	0,0002472	-0,000182424	0,000125408
Nr	-0,014795246	0,000134696	0,054045503	-0,0000402
Rcom	0,000815245	-0,0000900	-0,05357723	0,000734682
	Transgaz			
Lg	-0,005662881	-0,013285533	0,009660158	0,0184673
Rsf	-0,008973416	-0,004105951	-0,005325578	-0,003820643
Nr	0,002419693	0,018319574	-0,005177589	-0,018610547
Rcom	-0,000720585	0,013139155	0,012028974	-0,001339015
	Condmag			
Lg	0,020249196	-0,002965681	-0,013733055	0,011689415
Rsf	-0,019973237	0,013109671	0,012008328	-0,016993888
Nr	-0,011348284	0,0031501	-0,021039007	-0,021122378
Rcom	0,043949058	0,026470369	-0,023141643	-0,031085703
	Transilvania Constructii			
Lg	0,061789346	-0,002244715	-0,000335379	0,000832873
Rsf	-0,11130294	-0,002949421	0,001076161	0,000274732
Nr	-0,016866181	-0,012112261	-0,000209325	-0,001178112
Rcom	-0,009679695	-0,016163045	-0,000286145	0,00373871

Source: Author-processed table