EARLY WARNING INDICATORS - EVOLUTION FOR THE MEDICAL COMPANIES REGISTERED AT BSE

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Abstract: *Setting up and analysis of financial early warning indicators for public or private companies is a much-debated scientific and practical subject. Theories and experiments, which led to the establishment of a common set of early warning indicators, are quite old, starting from the 1950's. These indicators came aggressively back into academic study and practice after the current world crisis. In the last years, several methods were tested by academic researchers and also by Banks and Audit agencies. The results seem to be different from one case study to another and seems to be linked with the financial data at the disposal of the researchers. The financial results of the medical companies are influenced by a large number of factors both internal and external: starting from state regulation, fierce international competition, innovation, so on. In this context, the current paper is proposing a brief analysis in the evolution of the financial early warning indicators for several medical and pharmaceutical companies registered in the Bucharest Stock Exchange. These elements are important since the selected companies are having a powerful national and regional influence over the economy and in the same time, these companies constitute primary contributors to Romania's GDP.*

Keywords: *bankruptcy; solvency; efficiency; financial early warning indicators; ROE; ROA; corporate finance.*

JEL Classification: *G32; G11; G17.*

1. Introduction

Identification and establishment of a financial early warning bankruptcy indicator system for private or public companies is an issue which proved to be interesting for both researchers and professionals from the field of science. Starting with the early research in bankruptcy and financial risks realized by Beaver (1966) and Altman (1968), and continuing with later published papers in the period 1970 – 2000 by authors such Deakin (1972), Ohlson (1980), Gilbert, Menon and Schwartz (1990), Altman (1993), Charitou, Neophytou and Charalambous (2004) the research for an early warning bankruptcy indicator system was developed in several steps:
- Simple bankruptcy analysis pioneered by Beaver(1966) based on statistical methods
- Z-score model proposed by Altman (1968) a very popular model until now
- Multiple logistic regression models as proposed by Ohlson(1980)
- Neural networks championed by Charitou, Neophytou and Charalambous (2004)
- Econometric/Combined models (Tarnoczi and Fenyves, 2011, Bedenik et al., 2012)

Most of these studies and other complementary studies (Karanovic et all, 2018) are tackling issues such bankruptcy, insolvency or excessive debt at the level of companies. The study of early warning indicators re-emerged in the last years as one of the most strategic instruments for the financial managers of the companies, for company owners, investors, bankers or for other professionals.

Starting from the last financial crisis new elements have been introduced in the analysis since both academic researchers and audit agencies realized that, for a proper measurement of the phenomenon more financial and non-financial factors should be analysed. The results seem to be different from one case study to another and seems to be linked with the financial data at the disposal of the researchers.

Authors Dimittrov and Yangyozov (2013) considered that the early warning indicators should be used for different purposes including increase of competitiveness and increase in revenues of the companies. They championed the idea of optimization: "a process which is improving over time".

Taken into consideration the above, the authors of this paper are trying to establish several indicators, which can be part of an financial early warning method, adapted for big utility and petroleum production or distribution companies operating in Romania. The authors selected several financial early warning indicators, which can be suitable for the proposed model. These are indicators including both classical liquidity or solvency indicators (Droj, 2012) and financial or economic efficiency indicators (Droj, 2015).

2. Selection of the Financial Indicators Suitable for the Financial Early Warning Detection Method

The financial indicators which will be used to test the companies registered at the Romanian stock market were presented earlier by the author in other studies (Droj, 2012, Droj 2015 and Droj 2016). Several other authors dealt with analysis of financial indicators in the region: Rozsa (2014), Fenyves et all (2018) or Karanovic and Karanovic (2016)

As mentioned earlier the indicators selected are representative for the issues of financial efficiency, liquidity and solvency were selected the following indicators:

Liquidity indicator:

Current ratio (WCR) is used to analyse the ability of a company to pay its current liabilities its current assets. This ratio is also known as the working capital ratio.

$$WCR = \frac{Current\ assets}{Current\ Liabilities}$$

Solvency ratio:
- shows the extent to which total debts are covered by total assets, and reflects the security enjoyed by creditors, as well as the creditworthiness of the company (Droj, 2012).

$$Sv = \frac{Total\ assets}{Total debts} x100$$

Return Indicators as presented by Droj (2015) and Rozsa (2012):

The **Return of Assets (ROA)** reflects the difference between an economic result: net profit, known in specialized literature as EBIT and the assets used for its achievement (Pierre, 2004).

$$ROA = \frac{Net\ Profit}{Total\ assets}$$

- The **Return on Equity (ROE)**, also known in French economic literature as "financial return rate", and abbreviated in the specialized literature as ROE. This indicator shows the efficiency of the capital invested by shareholders. ROE constitutes one of the most important return indicators, being used by company owners and potential investors in the investment decision-making process.

$$ROE = \frac{Net\ Profit}{Equity}$$

These indicators were tested by analyzing the Financial Reports of the most important medical and pharmaceutical companies from the Romanian Stock Market in the period 2014-2017.

3. Financial Early Warning Indicators at Medical and Pharmaceutical Companies from Romania in the Period 2012-2016

The analyzed period (2012-2016) was a period in which the Bucharest Stock Exchange regained steadily its values following the difficult period after the last financial crisis. Also an important event for BSB was the IPO of Medlife, December 2016 since Medlife is the biggest Romanian private health operator and completed an extremely successful IPO, despite poor financial results.

Other important facts in this period were the consolidation of major stockholders in Zentiva and Biofarm. The financial and current operations of these companies are influenced, directly, by the international market where the medical and pharmaceutical fields acknowledged increasing globalization tendencies. A strong influence over these companies was also brought by the fluctuation of prices for petrochemical products, natural gas and chemical industries.

As mentioned above the selected companies are the following: Antibiotice SA, Biofarm SA, Zentiva SA, Sintofarm Bucuresti SA, Farmaceutica Remedia SA, Ropharma SA and Medlife SA.

Since all these companies are public listed companies at Bucharest Stock Exchange the data was collected from Bucharest Stock Exchange (www.bvb.ro), the section of financial reports.

In order to confront the financial information were analyzed the websites of these companies. The study was based on analysis of the six financial indicators presented above based on the financial data reported in the period 2012-2016.

Table 1. Financial Early warning Indicators for Antibiotice SA

Indicators	2012	2016	Δ	Δ%
ROE	7,82%	7,42%	-0,40%	-5,10
Economic efficiency	220361,0724	238150,4134	17789,34103	8,07
Solvency	3,29428923	4,65987149	1,36558226	41,45
ROA	13,33%	14,00%	0,01	4,99

Source: Calculation of the authors based on the data from www.bvb.ro

As observed Antibiotice SA achieved mostly positive results in this period consolidating their solvency and increasing their economic efficiency.
Other company with good financial results is Biofarm SA, where all the analysed indicators shown that the company has a healthy financial life and also has a very low risk of bankruptcy.

Table 2. Financial Early warning Indicators for Biofarm SA

Indicators	2012	2016	Δ	Δ%
ROE	12,78%	14,95%	2,17%	16,95
Economic efficiency	327621,7794	390066,9948	62445,21543	19,06
Solvency	6,128480992	6,215355766	0,086874775	1,42
ROA	10,60%	12,40%	0,02	16,98

Source: Calculation of the authors based on the data from www.bvb.ro

Zentiva SA, part of the Sanofi Group, obtained excellent results as well in this period since both ROE and ROA achieved record level for the pharmaceutical company.

Table 3. Financial Early warning Indicators for Zentiva SA

Indicators	2012	2016	Δ	Δ%
ROE	12,78%	16,94%	0,0416238	32,575841
Economic efficiency	493640,6045	818667,1751	325026,57	65,842754
Solvency	6,189469353	4,860023417	-1,329446	-21,479159
ROA	9,96%	11,94%	0,0197874	19,866497

Source: Calculation of the authors based on the data from www.bvb.ro

The following two companies had declining financial indicators probably caused by the strong competition in the sector and turbulences in the chemical and petroleum industry market:

Table 4. Financial Early warning Indicators for Sintofarm SA and Farmaceutica Remedia SA

FARMACEUTICA REMEDIA SA				SINTOFARM SA BUCURESTI			
Indicators	2012	2016	Δ	Indicator	2012	2016	Δ
ROE	0,135071	0,006091	-0,12898	ROE	0,111279	0,011827	-0,09945
Economic e	565369,8	261035,9	-304334	Economic e	154467,3	145711,1	-8756,2
Solvency	1,268415	2,178427	0,910012	Solvency	6,077107	5,856446	-0,22066
ROA	0,028019	0,003295	-0,02472	ROA	0,092968	0,009808	-0,08316

Source: Calculation of the authors based on the data from www.bvb.ro

The surprising underperformers in this category were Ropharma and especially Medlife SA, which in the year of its IPO reported net losses, and therefore negative ROE and ROA.
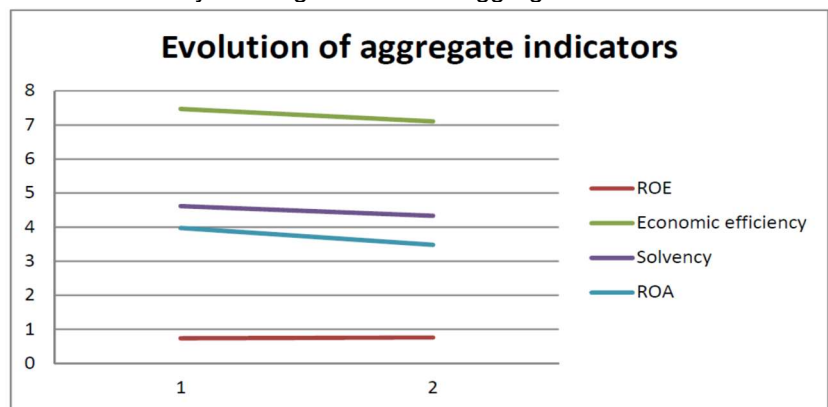
Table 5. Financial Early warning Indicators for Ropharma SA and Medlife SA

ROPHARMA SA				Medlife SA			
Indicators	2012	2016	Δ	Indicators	2012	2016	Δ
ROE	0,064845	0,053451	-0,01139	ROE	0	0	0
Economic efficiency	515173,2	483741,4	-31431,8	Economic efficiency	131809,7	223667	91857,25
Solvency	1,434077	2,761751	1,327674	Solvency	1,283781	1,348899	0,065118
ROA	0,025583	0,038225	0,012641	ROA	0	0	0

Source: Calculation of the authors based on the data from www.bvb.ro

When analysing the cumulated results for the financial early warning indicators can be observed, as a general evolution that a synergy is obtained between the ROE and solvency indicators. But it can be observed that the economic efficiency indicator and ROE are not at all in line with the other indicators proving that an financial early warning detection system for the companies must include several other categories of indicators in order to be functional.

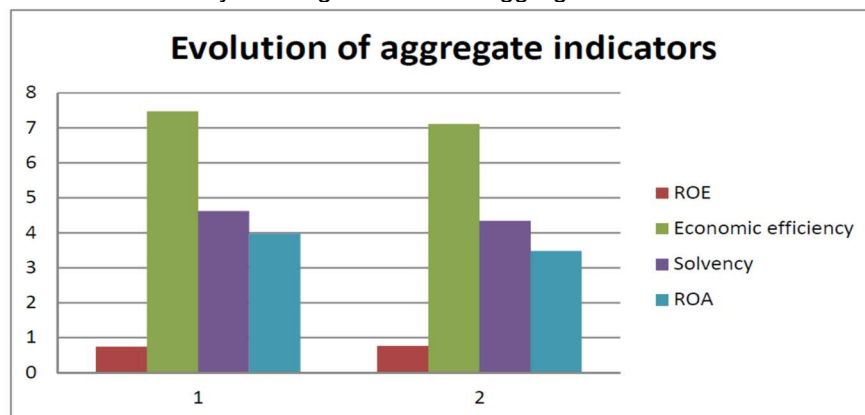**Table 6.** Financial Early warning Indicators – aggregate result

Source: Calculation of the authors based on the data from www.bvb.ro

4. Conclusions

Identification and establishment of a financial early warning bankruptcy indicator system for private or public companies is an issue which proved to be interesting for both researchers and professionals from the field of science.

Table 7. Financial Early warning Indicators – aggregate result

Source: Calculation of the authors based on the data from www.bvb.ro

In which concerns the analysed companies the aggregate results showed a totally surprising result: in contrast with the general situation of BVB index did not improved significantly over the four-year period of analyses, in some cases even deteriorating in this period.

As a general conclusion of the paper we can consider that the four indicators used in this study are not sufficient to establish decent conclusions in establishing a financial early warning model. These indicators must be accompanied by several other types of indicators both financial, macro-economic, sectorial and also non-financial qualitative or quantitative. This study should be continued on a larger scale and including other indicators in order to establish a real functioning model for early warning in case of public and private companies.

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