COMPARATIVE RESEARCH ON THE FUNDAMENTAL ANALYSIS OF SHARES FROM COMPANIES LISTED ON BUCHAREST STOCK EXCHANGE

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Upon passing to a market economy, it became necessary to find out information as accurate as possible regarding the risk of bankruptcy of a certain companyin the future, in order to determine the share of such a risk and the importance of the fundamental analysis within the prediction of the evolution of stock price. In spite of these, specialists say that this type of analysis, in relation to the technical analysis, in the context of the financial crisis, determined an accentuated decrease of the stock exchange indices on an international level. The paper deals with the results of the research and of a comparative study regarding the fundamental analysis of the shares of 6 companies listed on Bucharest Stock Exchange (BVB).

Key words: risk, bankruptcy, score function, fundamental analysis

JEL Classification: G32, G33, C39

1. Introduction

In the current context of the functional market economy, the evaluation and fundamental analysis of the shares of the listed companies play a significant role in terms of the possibility of future enrichment. However, there is a direct connection between risk and bankruptcy, thus the project of an action with a higher risk implies a proportionate bankruptcy risk. The diagnosis of the bankruptcy risk reflects the evaluation of the capacity of the company to fulfil its obligations towards third parties.

2. The goal of the research

The stages of the study are:
1. Selecting the score function;
2. Presenting the companies selected for the study;
3. Determining the score function according to the chosen models;
4. Calculating the correlation indices between the dynamics of the score function value and the stock price;
5. Drawing the conclusions.

2.1. Selecting the score function

The performance analysis represents, undoubtedly, an essential aspect of the financial diagnosis, but the conclusions are often incomplete if we do not take into consideration the other aspect of the financial analysis, namely, the risk. Therefore, we may state that the risk is the potential prejudice which the patrimony, the interests and the activity of the economic agent are subject to.

The evaluation of the risk of a company entering and remaining in business on a competitive market presupposes certain statistical methods, among which we mention the score method or "credit-scoring" for short-tem. The purpose of this method is to establish an indicator for each company, called "score" which makes it possible to estimate the bankruptcy status of the company. Among the most known statistical models, we mention: I Anghel model, Altman model, Conan-Holder model, the model

of the France Central Bank Balance Sheet, the model of the Romanian Commercial Bank, Băileşteanu model, Ivonciu model and the model of the Agricultural Bank, etc.

In an attempt to offer a coherent analysis model of the bankruptcy risk for the Romanian companies, the specialty literature presents autochthonous models tested in the Romanian economy with relevant results. Thus, we used two methods for determining bankruptcy risk within our research: I. Anghel model and Băileşteanu model.

I. Anghel model was made on a group of 276 companies (between 1994 and 1998) belonging to 12 branches of the Romanian economy, while Băileşteanu model starts from the conditions which signal the appearance of the bankruptcy of a company, namely, the impossibility to pay current debts, the lack of financial resources for reimbursing average and long-term debts, late collection of the counter value of the delivered products or lack of profit, finding that there may be a strong interdependence between conditions, fact which may justify us to take into consideration certain indicators specific to a company.

Each model has its own equation for determining the score function. The model shall include:

- The score function within Anghel Model has the following structure:

$$A= 5.676 + 6.3718*X1 + 5.3932*X2 – 5.1427*X3 – 0.0105*X4$$

The significance of the score function indicators is presented in the table below:

Table no. 1. Indicators specific to the score function - Anghel model

Symbol	Indicator name	Calculation
X1	Net profitability of the income	Net result / Income
X2	Cash flow coverage rate of the total assets	Net cash flow/ Total assets
X3	Indebtedness degree of the total assets	Total liabilities/ Total assets
X4	Average debt payment duration	(Obligations/ Turnover) * 360

Source: I. Anghel, *Falimentul. Radiografie şi predicţie*, Editura Economică, Bucureşti, 2002; processed data

- According to Băileşteanu model, the score function has the following structure:

$$B = 0.444*G1 + 0.909*G2 + 0.0526*G3 +0.0333*G4 +1.414$$

The significance of the score function indicators is presented in the table below:

Table no. 2. Indicators specific to the score function –Băileşteanu model

Symbol	Indicator name	Calculation
G1	General liquidity	Current assets / Current liabilities
G2	Solvability	Total assets / Total liabilities
G3	Recovery of the clients	Turnover/Clients
G4	Profitability of the costs	Profit/Cost * 100

Source: Gh. Băileşteanu, *Diagnostic, risc şi eficienţă în afaceri*, Editura Mirton, Timişoara, 1998; processed data

2.2. Presenting the companies selected for the study

The companies subject to the stock evolution analysis pertain to the Premium tier of the Bucharest Stock Exchange. In order to obtain proper, valid results, we removed the companies which perform mediation services and financial services because the score function was built on a sample which did not include this type of business. Thus, we excluded the following companies: Banca Comercială Carpatica S.A., BRD Groupe Société GénéraleS.A., S.S.I.F. Broker S.A., SIF Banat Crişana S.A., SIF Moldova S.A., SIF Transilvania S.A., SIF Muntenia S.A., SIF Oltenia S.A., Banca Transilvania S.A.

The companies from the Premium tier of the Bucharest Stock Exchange must meet thorough requirements of informational transparency as compared to the other categories and sections of the capital market, this being the main reason for choosing them.

Table No. 3. Economic and financial indicators – 2011

Indicators	Antibiotice S.A.	Biofarm S.A.	Farmaceutica Remedia	OMV PETROM S.A.	C.N.T.E.E. Transelectrica	S.N.T.G.N. Transgaz S.A.
Current Assets	273,825,872	116,806,104	126,783,516	7,816,033,986	1,539,956,810	708,910,933
Total Assets	486,079,586	184,163,469	162,882,662	35,441,961,212	5,173,336,947	3,969,691,461
Net Cash Flow	87,756,433	50,650,939	18,537,922	2,756,973,108	1,314,918,564	141,351,723
Turnover	281,847,455	93,443,090	203,467,822	16,565,465,973	3,096,326,701	1,336,978,729
Clients	226,542,977	51,295,946	87,351,464	5,491,942,233	1,193,469,976	390,923,522
Cost	276,227,000	81,984,142	200,507,211	13,347,865,161	3,113,263,426	995,890,149
Total Liabilities	148,750,003	29,505,550	121,151,787	7,073,512,499	2,361,943,106	583,127,922
Current Liabilities	142,722,091	29,102,863	120,614,152	4,842,236,026	1,418,450,579	367,814,348
Gross Profit	26,314,410	16,927,856	5,399,960	4,466,362,188	143,150,037	461,731,020
Net Profit	20,196,416	14,220,788	4,077,449	3,729,787,711	109,937,804	387,203,013
Total Revenues	302,541,410	98,911,998	205,907,171	17,814,227,349	3,256,413,463	1,457,621,169

Source: www.bvb.ro, processed data

Table No. 4. Economic and financial indicators – 2012

Indicators	Antibiotice S.A.	Biofarm S.A.	Farmaceutica Remedia	OMV PETROM S.A.	C.N.T.E.E. Transelectrica	S.N.T.G.N. TransgazS.A.
Current Assets	310,675,989	124,727,284	160,373,100	5,587,991,879	1,179,406,240	557,212,189
Total Assets	513,445,903	197,674,214	198,071,266	37,087,586,513	4,934,886,181	3,896,037,910
Net Cash Flow	98,296,848	53,123,130	17,185,955	2,312,061,175	1,398,913,052	94,150,583
Turnover	304,731,950	104,970,886	237,446,333	19,510,054,765	2,726,883,053	1,327,987,233
Clients	256,695,578	55,970,393	110,108,108	3,267,137,787	843,848,792	342,368,965
Cost	290,369,934	87,777,948	232,883,073	16,379,213,905	2,817,361,880	1,027,243,334
Total Liabilities	156,124,096	32,391,453	156,271,260	6,860,638,545	1,955,704,536	486,108,764
Current Liabilities	155,205,658	32,375,044	154,258,410	5,014,569,278	1,001,077,977	343,912,586
Gross Profit	32,459,037	23,613,457	6,833,731	4,583,469,637	47,044,000	392,915,631
Net Profit	27,110,836	21,036,200	5,553,843	3,850,620,876	34,487,968	329,305,243
Total Revenues	322,828,971	111,391,405	239,716,804	20,962,683,542	2,864,405,880	1,420,158,965

Source: www.bvb.ro, processed data

Table No. 5. Economic and financial indicators – 2013

Indicators	Antibiotice S.A.	Biofarm S.A.	Farmaceutica Remedia	OMV PETROM S.A.	C.N.T.E.E. Transelectrica	S.N.T.G.N. Transgaz S.A.
Current Assets	313,535,424	130,877,040	121,481,488	5,284,284,416	1,488,632,064	696,965,504
Total Assets	507,615,128	209,658,636	159,201,332	38,600,902,064	5,142,618,148	3,927,864,716
Net Cash Flow	82,626,952	49,524,124	16,201,054	1,434,748,633	1,232,884,988	59,698,567

Turnover	318,625,024	119,072,520	237,835,520	18,071,914,496	2,421,639,936	1,484,714,112
Clients	226,542,977	64,361,892	81,054,600	2,709,252,864	850,954,752	395,411,840
Cost	308,155,648	95,629,760	236,506,656	14,269,202,432	2,321,214,720	1,127,428,608
Total Liabilities	151,150,756	32,308,794	118,954,981	5,444,188,928	1,929,752,896	406,579,944
Current Liabilities	133,702,464	32,308,794	117,245,352	3,924,789,248	978,384,640	296,811,392
Gross Profit	34,690,920	29,115,341	3,461,839	5,667,087,872	239,751,776	429,932,800
Net Profit	31,380,856	25,581,080	3,013,374	4,839,327,232	200,927,856	334,491,424
Total Revenues	342,846,560	124,745,140	239,968,496	19,936,290,813	2,560,966,400	1,557,361,408

Source: www.bvb.ro, processed data

2.3. Determining the score function according to the chosen models

Subsequently, we centralised the values afferent to the eight indicators included in the two score functions associated with the companies included in the present study. These values have helped us finding the score function corresponding to each company for the three years, respectively 2011-2013.

Table No. 6. Score function value regarding Anghel model

Company / Year	2011	2012	2013
Antibiotice S.A.	3.5868	3.7543	4.0195
Biofarm S.A.	6.0735	6.3097	6.4380
Farmaceutica Remedia	0.3506	-0.2219	0.5987
OMV PETROM S.A.	5.2979	5.2543	-0.6512
C.N.T.E.E. Transelectrica	3.1819	3.8551	4.0116
S.N.T.G.N. Transgaz S.A.	5.7655	5.6627	5.8375

Source: processed and calculated data

According to Anghel model we notice that the companies subject to the analysis record an ascending trend of the score function values over the three years, being situated in the non-bankruptcy area and getting beyond the uncertainty area. The exception is represented by the companies Farmaceutica Remedia and OMV Petrom S.A. which present a negative value in 2012, respectively in 2013, reflecting a possible state of bankruptcy.

Table No. 7. Score function value regarding Băileşteanu model

Company / Year	2011	2012	2013
Antibiotice S.A.	5.6189	5.7269	5.9491
Biofarm S.A.	9.6531	9.6664	10.2224
Farmaceutica Remedia	3.3149	3.2389	3.2936
OMV PETROM S.A.	7.9612	8.0686	10.1303
C.N.T.E.E. Transelectrica	4.1766	4.4563	5.0056
S.N.T.G.N. Transgaz S.A.	10.1817	10.8965	12.7055

Source: processed and calculated data

We notice that the values obtained through Băileşteanu model go far beyond the 2.9 threshold which means that, according to the author's interpretation, the 6 analysed companies are characterised by an improbable bankruptcy risk, finding themselves in a favourable area, therefore, these companies may take credits. Furthermore, we record the ascending evolution of the score

function values afferent to the three analysed years, in the context of the economic recovery after the crisis of 2007-2008, except for Farmaceutica Remedia which records a slight decrease in 2012. Comparing the values obtained using the two models, we may conclude that the analysed companies are characterised by an ascending trend which places them in a favourable spot, implying an improbably bankruptcy risk, due to the positive values of the score function obtained over the three years.

2.4. Calculating the correlation indices between the dynamics of the calculated score function value and the stock price

The fundamental analysis together with the technical analysis represent two important approaches used in selecting the actions to be included in various portfolios, each of them providing a series of data essential for the investors. By O.G. no. 2/2001 it was instituted the administrative liability of legal persons. The old Law, law 32/1968 provided just fine as a penalty that could be applied to a legal person and only if it was eestablished by law or decree. According to the current legal regime of contraventions, personal liability for legal entities it is also established by the current legal regime of contraventions.[69]

Given this fact, we may state that each of the supporters considers its own approach as being unique and reliable; however, at present, they rather complete than exclude each other.

The fundamental analysis is based exclusively on the interpretation of certain indicators calculated on the basis of the financial standing of a company (balance sheet, profit and loss account, cash flow situation, annexes to the balance sheet). In fact, the fundamental analysis takes into consideration a series of factors which may influence the intrinsic value of a share, irrespective of whether they are specified in the financial standings of the listed company or not.

A particular problem that has called into question since there was still in force Law No 32/1968 (the former law concerning the legal regime of offenses) and that is still arousing interest for the specialists and practitioners practice is the issue of limitation in for lifting of unauthorized construction. The thorniest part of the problem relates to the time when this term flows, if it could be invoked by the authorities or by the offender in case of subsequent obtaining of authorisation after the discovery of a contraventional act.[70]

Practically, the fundamental analysis lays stress on the evaluation of an asset and takes into account the observance of certain essential principles when evaluating that asset. As a consequence, we may consider the three approaches specific to the evaluation, namely: the evaluation based on future gains, the evaluation based on comparison and, respectively, the evaluation based on active accounts.

Each of these three approaches may be taken into account at a certain time, however, we must not overlook the fact that the accurate implementation of each of the evaluation types must lead to the same result. To that end, we must take into consideration information such as: the credibility of the information required for the evaluation process, the credibility of the scenarios considered for the evaluation process, as well as economic-financial coherences.

Due to this reason, for estimating a value as relevant as possible we must take into account a series of determining factors, with a varied scope, among which we find the following: factors of global influence, macroeconomic variables, scope of business, the share-issuing enterprise, the size of the share package, the liquidity of shares, various aspects concerning the corporate governance, etc.

The dynamics of the shares of the companies which made the object of the study at Bucharest Stock Exchange between 2011 and 2013 is illustrated in the table below:

Table No. 8. Price per share on the BSE of companies included in study (2011-2013)

Company / Year	2011		2012		2013	
Antibiotice S.A	0.6250	0.3900	0.3901	0.3764	0.3825	0.5580
Biofarm S.A.	0.2089	0.1929	0.1949	0.2085	0.2095	0.3020

[69] Mihăilescu Mădălina Elena, Sancţiuni contravenţionale, Aspecte de drept material în dreptul românesc şi comparat, unic autor, Editura Hamangiu, Bucureşti, România, 2013, ISBN 978-606-678-666-9

[70] Mihăilescu Mădălina Elena, Câteva consideraţii pe marginea sancţiunii contravenţionale a desfiinţării lucrărilor şi aducerii lucrărilor în faza iniţială", "Curierul judiciar" nr. 3/ 2011, ISSN 1582-7526, Edit ALL Beck.

FarmaceuticaRemedia	0.2012	0.1990	0.2000	0.2652	0.2707	0.2950
OMV PETROM S.A.	0.3410	0.2900	0.2900	0.4281	0.4400	0.4698
C.N.T.E.E. Transelectrica	20.440	17.400	17.6500	12.6900	13.5300	15.7900
S.N.T.G.N. Transgaz S.A.	280.0	223.35	223.00	218.00	223.45	185.25

Source: www.ktd.ro, closing price of the first and last day of trading

The correlation index (Ic) is determined in relation to the variation of the share price evolution between two financial years (ΔCa) and the variation of the score function within the same reference period (ΔA). This index expresses the degree of relevance of the discriminant analysis in the share evolution of a company on the stock market.

Table No. 9. Correlation index values between the score evolution and share price evolution – Anghel model

Year	Indicators	Antibiotice S.A	Biofarm S.A.	Farmaceutica Remedia	OMV PETROM S.A.	C.N.T.E.E. Transelectrica	S.N.T.G.N. Transgaz S.A.
2011	**Price/ share variation**	-37.67%	-7.66%	-1.09%	-14.96%	-14.87%	-20.23%
2012	**Price/ share variation**	-3.51%	6.98%	32.60%	47.62%	-28.10%	-2.24%
	Score variation	4.67%	3.89%	-163.29%	-0.82%	21.16%	-1.78%
	Corelation index	**-0.75**	**1.79**	**-0.2**	**-58.07**	**-1.33**	**1.26**
2013	**Price/ share variation**	45.88%	44.15%	8.98%	6.77%	16.70%	-17.10%
	Score variation	7.06%	2.03%	-369.81%	-112.39%	4.06%	3.09%
	Corelation index	**6.49**	**21.72**	**-0.02**	**-0.06**	**4.11**	**-51.54**

Source: processed and calculated data

The values of the correlation index afferent to Anghel model may be synthesised as follows:

- for the year 2012 we notice 4 companies which record a negative value of the index, expressing the absence of a direct correlation between the economic-financial situation and the evolution of the share price. There are, however, two companies, Biofarm S.A. and S.N.T.G.N. Transgaz S.A., with a strong correlation;
- for the year 2013 half of the analysed companies record negative values of the correlation index, the other three companies recording additional values, illustrating the fact that the economic-financial situation of each company partially accounts for the dynamics of the stock price.

Table No. 10. Correlation index values between the score evolution and share price evolution – Băileşteanu model

Year	Indicators	Antibiotice S.A	Biofarm S.A.	Farmaceutica Remedia	OMV PETROM S.A.	C.N.T.E.E. Transelectrica	S.N.T.G.N. Transgaz S.A.
2011	**Price/ share variation**	-37.67%	-7.66%	-1.09%	-14.96%	-14.87%	-20.23%
2012	**Price/ share variation**	-3.51%	6.98%	32.60%	47.62%	-28.10%	-2.24%
	Score variation	1.92%	0.14%	-2.29%	1.35%	6.70%	7.02%
	Corelation	**-1.83**	**50.65**	**-14.22**	**35.30**	**-4.19**	**-0.32**

Year	Indicators	Antibiotice S.A	Biofarm S.A.	Farmaceutica Remedia	OMV PETROM S.A.	C.N.T.E.E. Transelectrica	S.N.T.G.N. Transgaz S.A.
	index						
2013	**Price/ share variation**	45.88%	44.15%	8.98%	6.77%	16.70%	-17.10%
	Score variation	3.88%	5.75%	1.69%	25.55%	12.33%	16.60%
	Corelation index	**11.83**	**7.68**	**5.32**	**0.26**	**1.35**	**-1.03**

Source: processed and calculated data

From the analysis of the correlation index values based in the score function values afferent to Băileşteanu model, we infer the following:

- for the year 2012 we notice 4 companies which record a negative value of the correlation index, expressing the inexistence of a direct correlation between the economic-financial situation of the 4 analysed companies and the dynamics of the shares of those companies. However, Biorfam S.A. and OMV Petrom S.A. record above par values of the correlation index, suggesting that the economic-financial situation partially accounts for the evolution of the share price of the two enterprises;
- for the year 2013 the correlation index records only one negative value - it is the case of S.N.T.G.N. Transgaz S.A. In exchange, we notice three companies (Antibiotice S.A, Biofarm S.A., Farmaceutica Remedia) with above par values of the correlation index, as well as a reduction of the index value in companies such as OMV Petrom S.A. as compared to 2012. Moreover, the correlation is also strongly manifested in the case of C.N.T.E.E. Transelectrica, with a value of 1.35 of the index.

To sum up, in 2012the three companies: Antibiotice S.A., Farmaceutica Remedia S.A., as well as C.N.T.E.E. Transelectrica recorded negative values of the correlation index calculated on the basis of the score function values afferent to Anghel and Băileşteanu models.

Also, in 2013, S.N.T.G.N. Transgaz S.A. recorded a negative value of the correlation index as expressed by the two analyses. Therefore, the two models of fundamental analysis are reliable and efficient in the case of the selected Romanian companies, producing coherent results.

2.5. Conclusions

Given the current economic context , trying to build a score function prediction bankruptcy of enterprises in Romania is a real challenge.

For assessing the risk of bankruptcy using the scoring method, two Romanian models were used, namely Bailesteanu Ghe. and Anghel I., and based on the balance sheet and the income and loss account of a Romanian companies for three years period, the results were similar and the risk of bankruptcy is very low, less than 10%. By analyzing data from the accounting synthesis documents, it results that the companies have a very good financial performance: high profitability, low degree of indebtedness and sufficient liquidity for making current payments. By recording a positive working capital fund which ensures funding of permanent allocations from permanent sources it results that there is a financial equilibrium on medium and long term.

In conclusion, we can say that the evolution of the share price on the stock market is somewhat uncertain due to many complex factors, one of them being the financial standing of the companies.

The degree of development of a stock market directly depends on the efficient use of the principles of corporate governance, as well as on ensuring real liquidity parameters.

Furthermore, the psychological factor also has an effect on the behaviour of the persons who trade on the stock market, determining various irrational evolutions of the transaction prices.

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