ASPECTS CONCERNING THE DETERMINATION OF BANKRUPTCY RISK BY SOLVENCY AND LIQUIDITY RATIOS IN THE COMPANIES LISTED ON THE BUCHAREST STOCK EXCHANGE

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Abstract: *This paper presents issues related to determining the bankruptcy risk for 64 companies listed on the Bucharest Stock Exchange.The purpose of this paper is to determine the percentage of companies falling within the normal range. In the introduction, we set the goal, the research methodology, and the novelty value of this work. Hereinafter, we presented different views of risk concepts, bankruptcy, solvency and liquidity. After that, based on theoretical presentations, a case study was conducted to determine the solvency and liquidity ratios. In the end, on the basis of the above considerations, the conclusions were established and some proposals were listed.*

Keywords: bankruptcy risk, solvency, liquidity, Bucharest Stock Exchange

JEL classification: G12, G31, G32, M41.

1. Introduction

This paper proposes an analysis starting from Paulo Coelho's quote, "*You have to take risks, we will only understand the miracle of life fully when we allow the unexpected to happen*." The objective pursued by this challenge is to statically analyze the bankruptcy risk with the solvency and liquidity ratios. The methodology for the elaboration of the paper involved choosing the theme, documentation, data collection, observation and financial analysis. The chosen theme - *Aspects concerning the determination of bankruptcy risk by solvency and liquidity ratios in the companies listed on the Bucharest Stock Exchange* - is based on the importance of eliminating bankruptcy.
Theme setting was followed by documentation, which was divided into theoretical documentation, taken from specific studies and documentary practice, performed on the 64 companies listed on the Bucharest Stock Exchange. With documentation, we collected the necessary data which were observed and analyzed to determine if companies are within normal limits. The references listed at the end of the study, made it possible to present the state of current knowledge.
The novelty of the study is provided by the analysis of a large number of companies in determining the risk of bankruptcy, which currently is an increasingly debated problem.

2. General approach to bankruptcy risk

"The diagnosis of bankruptcy risk is to assess the company's ability to meet commitments to third parties, so in the evolution of solvency and liquidity of the company. The analysis of bankruptcy risk is done in a static manner by studying financial equilibrium of the balance." (Ion Stancu, 2007: 776)

For "an enterprise to withstand market conditions, it should be solvable, which means to have the ability to cope with the bonds maturing at a time." Professor TeodorHada(1999: 197) also states that "a company is forced to work in balance. Any disturbance of this will inevitably lead to difficulties in conducting business and, ultimately, to bankruptcy."
In what follows, we will address the bankruptcy risk because to prevent a company from bankruptcy is important both for the economy of a country and for the economic agent.

2.1 The concept of risk viewed in financial terms

The risk, according to Pierre Conso, (1985) is "the inability of a company to adapt to time, the lowest cost andenvironmental changes." In "La faisabilite the projet" (Wilson O'Shaughnessy, 1983) the risk is "the possibility that a fact with unintended consequences to occur."

Other authors link the concept of risk to an uncertain, unclear event, so it is,in Mark Dorfman'sview (2007) "variability of the possible result depending on an uncertain, unclear event ". All these definitions were taken over by CristianPăun and Laura Păun in a paper talking about risk (1999: 18 - 19).

Risk structure, according to Professor Monica VioletaAchim(2012:369): "economic risk, financial risk, market risk, tax risk, interest rate risk, marginal risk, specific risk, currency risk and bankruptcy risk."

2.2 Insolvency proceedings of companies

Government Emergency Ordinance 91/2013 defines insolvency as "the state of the debtor's assets that is characterized by shortage of funds available for the payment of certain, liquid and due debts".

Top ten causes of bankruptcy, considered the new cases arising under CNME study, are: customers' bankruptcy, which has a frequency of 21%; very important stocks 11%; suspension of banking competitions 11%; very high staff expenses 10%; death or disease of the manager 10%; poor accounting; ignorance of budgeted costs 9%; unfair maneuvers8%; expropriation; transfer 8%;conjecturaldecrease in turnover 8%; poor business organization6%. These data were taken by Petre Brezeanu (2008: 407) and SterePopescu, FloricaOprişan (1998: 61) from CNME (1977). In 2013, in Romania, the phenomenon of bankruptcy increased, from a total of over 600,000 active enterprises in 2013, registered with the Trade Registry, which are not insolvent, 19,800 have a decisive role in the economy, thesehaving assets greater than one million euro. In the past four years, out of over 120,000 companies which entered into insolvency proceedings, only 2,200 were considered impact companies. The analysis showed that the number of companies in distress or imminent insolvency is much higher than that of healthy companies, this information being provided by Mediafax.

The determination of bankruptcy risk has been based on a number of 64 companies, listed on the Bucharest Stock Exchange, according to top 100 issuers after capitalization. Data processing was conducted in the annual financial statements, expressed in lei for 2011, being published on Bucharest Stock Exchangewebsite.

3. Static methods of analysis of bankruptcy risk

In specialized literature, various studies show that bankruptcy risk can be determined with solvency ratios and liquidity ratios, which are static methods or by the scores, including Altman model, Conan-Holder model, Holder, Loeb and Portiermodel, Central Bank of France model and other not listed scoring methods.

3.1 Solvency analysis

Solvency appears defined in the dictionary of economics (NiţaDobrotă 1995: 440) as "the ability of the company to meet long-term bonds, resulting either from prior contracted commitments, or current operations, or compulsory levies, and property uses, as minimum threshold, a rate of 33% of net assets of the total liabilities."

In an enterprise approach, the American authors estimated that “solvency is the risk associated with the volatility of revenue streams, often described as business risk resulting from the volatility associated with operating income, sales and business indebtedness related to operating activity and financial risk resulting from the impact of debt use on capital profitability, measured by indicators of debt and cash flow coverage."(Hennie van Greuning, 2011: 65)
Ion Stancu (2007: 777) established the indicators used to determine solvency. They are:

- Liability ratio calculated as a proportion in which the total assets are financed from sources other than their own, such as loans, suppliers, state debts.

$$\text{Liability ratio} = \frac{\text{Long-term debt}}{\text{Long-term debt+ Equity}} \times 100$$

- Financial Leverage is the ratio of financial liabilities and equity, reflecting the ability of financial managers to attract external resources to boost equity efficiency.

$$\text{Leverage} = \frac{\text{Long-term debt}}{\text{Equity}} \times 100$$

In the context of limited material liability of shareholders, in the capital, very good solvency is assessed for an indebtedness ratio of less than 50% and a leverage of less than 100%. Further, we determined solvency ratios for the 64 companies which are the subject for our case study, the results of which are presented in Annex 1 "Determination of solvency ratios." For example, liability ratio for Condmag S.A. (Ltd) (COMI) was calculated as follows: {12.546.041/(12.546.041+133.194.377)}×100=8,61%. This indicator is within normal limits as it is less than 50%. Of all companies, 58 recorded normal value. The leverage for the company ElectroputereS.A. (Ltd) (EPT) was determined as follows: (278.383.786/ 20.898.016)×100=1.332,11%, this value does not fall within the normal limits, being greater than 100%. Of all the 64 companies analyzed, 59 are within normal limits.

3.2. Liquidity analysis

Liquidity is "the ability of an economic unit to meet the deadline for the ratio between payment means and the dueliabilities, with the financial resources that depend on its payment obligations"(Gheorghe Bistriceanu, 2006: 436).
International Financial Reporting Standards (2011, Conceptual Framework) statethat liquidity refers to "the availability of cash in the near future, after taking into account financial liabilities related to this period."
The indicators for expressing liquidity ratios (Ion Stancu, 2007: 777-778) are:

- The current ratio compares all potential liquidity associated to the assets under one year with all maturing liabilities under one year.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} \times 100$$

Current assets include circulating assets and prepaid expenses, and current liabilities include debts or amounts to be paid within a period of up to one year and deferred income.Normally, this rate must be greater than 100%, which means the existence of a revolving fund. Accounting regulations in force (Order no. 3055/2009) call the ratio "Current liquidity indicator" or "Current capital indicator."

- Quick ratio or Acid test, according to professors Monica VioletaAchim and SorinNicolaeBorlea (2012: 232), highlights the ability of current assets with high and average liquidity to face the current liabilities of the entity.

$$\text{Quick ratio} = \frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}} \times 100$$

Banks require often a minimum limit of this rate of 80%.

- Immediate ratio or cash ratio providesthe interface ofliquid asset elements with short-term liabilities.

$$\text{Cash ratio} = \frac{\text{Cash and cash equivalents} + \text{Short-term financial investments}}{\text{Current liabilities}} \times 100$$

Average value of this indicator is between 20% and 30%.These ratios express quantitatively different liquidity degrees of active assembly, without analyzing the quality of their liquidity, and therefore they should be interpreted with caution.

In Annex 2 - "Determination of liquidity ratios" –we have presented the results of the indicators specific to liquidity, determined for the 64 companies listed on the Bucharest Stock Exchange.

Current ratio for the company Dafora S.A. (Ltd) (DAFR) was determined as follows: {(138.826.875+106.043)/(113.120.356+291.586)}×100=122,82%. This example falls within the normal range, as well as 49 other company, according to the results published in Annex 2, fall within the normal limit that means they have a result of over 100%. Quick ratio for the companySocepS.A. (Ltd) (SOCP) was calculated as follows: {[(50.304.631+39.720)+1.518.066]/(3.771.610+183.600)×100=1.234,48%. This company exceeds the minimum value of 80%, therefore it falls within the normal limit and, of all the companies analyzed, a total of 40 companies have normal values. Cash ratio for MjMaillisRomânia S.A. (Ltd) (MJM) was determined as follows: {(1.229.957+0)/(42.277.382+160.996)}×100= 2,90%. The value obtained is below the normal limit, set between 20% and 30%, and only five companies analyzed fall within this.

4. Conclusions

With the survey, we found that the risk of bankruptcy during the recessionis a factor of maximum stress for business, especially for small and midsize business.

Of the many definitions given by various authors, or published in special legislation, it appears that the risk of bankruptcy or insolvency, as it is called, expresses the possibility of occurrence of failure tofulfill all due obligations, as a result of closure of the previous and uncoveredyears with losses that have fully exhaustedthe equity. In a famous quote given by Ray Bradbury it is said that *Risk means to jump off a cliff and build your wings on the way down.* After establishing the general aspects of bankruptcy risk, liquidity and solvency ratios were determined for the 64 companies listed on the Bucharest Stock Exchange Value. Following the calculations performed in the two annexes, companies fall within normal values, in a rate of: liability ratio 90,63%, leverage 92,19%, current ratio 76,56%, quick ratio 62,5%, cash ratio 7,81%.

Therefore, based on what we have mentioned above and on the calculations one can say that bankruptcy risk, calculated by solvency and liquidity, is low because most companies considered fall within normal values.

A proposal for companies to reduce bankruptcy in Romania, appeared in 2013, is trying to sell as many products, timely collection of receivables, correct management of liquidity, proper budgeting of customers.

5. References

Achim, M.V.; Borlea, S.N. (2012).*Financial analysis of the economic entity*, Risoprint Publishing House, Cluj-Napoca, pp. 232 - 369.

Bistriceanu,G. (2006) *Small encyclopedia of finance, money, insurance*, 2ndVolume, University Publishing House, Bucharest, p. 436.

Brezeanu, P. (2008) *Corporate Finance*, 1st Volume, C.H.Beck Publishing House, p. 407.

Conso,P. (1985)*La gestionfinancière de l'entreprise*, ÉditeurDunod, Paris.

Dobrotă, N. (1995) "*Dictionary of Economics*", Economic Publishing House, Bucharest, p. 440.
Dorfman,M. (2007)*Introduction to Risk Management and Insurance*, 9thÉditeur.
Greuning, V. H;Scott, D., Terblanche, S. (2011) *International Financial Reporting Standards - A Practical Guide*, 4thEdition, IRECSON Publishing House, Bucharest p. 65.
Hada, T. (1999) *Finances of economic agents in Romania*, Intelcredo Publishing House, Deva, p. 197.
Oprișan, F.;Popescu, S. (1998) Financial equilibrium of the company, Legislative Economic Bulletin No. 4, Economic Tribune Publishing House, p. 61.
Order of the Ministry of Finance, no. 3055 of 29 October 2009 approving the Accounting Regulations in accordance with European Directives
Government Emergency Ordinance no. 91/2013 on insolvencyproceedings and proceedings to prevent insolvency, published in the Official Gazette no. 620 / 04.10.2013
Păun, C.; Păun, L. (1999) *Country risk*, Economic Publishing House, pp. 18 - 19.
Shaughnessy,W. (1983), "La faisabilite de project", Éditeur SMG, Paris.
Bucharest Stock Exchange website, www.bvb.ro
Mediafax website, www.mediafax.ro, item "About 3,200 companies with impact in economy are in inevitable or undeclaredinsolvency " website accessed on 28/03/2014.
Stancu, I. (2007) "Finance", 4thEdition, Economic Publishing House, pp. 776-778.
International Financial Reporting Standards (2011), CECCAR Publishing House, Bucharest.

Annex 1: Determination of solvency ratios

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Company Name (Trading symbol)	Debts: The amounts to be paid over a period greater than one year	Equity	Debt rate	Leverage
ALR	572.823.176	1.553.478.084	26,94	36,87
ALT	2.601.708	108.817.664	2,34	2,39
ALU	0	67.317.750	0	0
AMO	0	65.085.786	0	0
APC	0	61.770.689	0	0
ARM	21.598.500	174.910	99,20	12.348,35
ARS	0	102.543.403	0	0
ART	303.629.332	428.779.733	41,46	70,81
ARTE	33.936	78.885.933	0,04	0,04
ATB	0	287.058.407	0	0
BCM	0	41.188.707	0	0
BIO	402.687	153.957.996	0,26	0,26
BRM	0	23.061.192	0	0
CAOR	11.402.695	68.265.291	14,31	16,70
CBC	158.376	64.750.678	0,24	0,24
CEON	74.935.959	28.556.970	72,41	262,41
CGC	0	-6.250.349	0	0
CMCM	6.443.536	262.717.089	2,39	2,45
CMF	0	31.673.038	0	0
CMP	76.947.904	292.562.890	20,82	26,30
CNTE	14.849	10.353.981	0,14	0,14
COMI	12.546.041	133.194.377	8,61	9,42

COS	990.135	-92.021.529	-1,09	-1,08
COTE	0	540.817.576	0	0
COTR	30.302.669	129.964.290	18,91	23,32
DAFR	167.042.255	157.590.102	51,46	106,00
ECT	0	11.698.064	0	0
EFO	1.137.324	232.964.488	0,49	0,49
ELGS	0	26.260.086	0	0
ELJ	868.085	25.631.133	3,28	3,39
ELMA	1.558.086	269.148.045	0,58	0,58
ENP	3.507.294	9.936.674	26,09	35,30
EPT	278.383.786	20.898.016	93,02	1.332,11
IMP	64.696.047	296.828.111	17,90	21,80
MECF	0	42.913.158	0	0
MEF	1.506.630	34.928.783	4,14	4,31
MJM	0	-8.607.446	0	0
OIL	4.263.066	345.226.806	1,22	1,23
OLT	986.004.655	-826.884.427	619,66	-119,24
PEI	22.910.779	13.013.030	63,78	176,06
PPL	0	47.572.517	0	0
PREH	25.605.300	202.531.399	11,22	12,64
PTR	0	128.436.335	0	0
RMAH	537.635	39.835.319	1,33	1,35
ROCE	27.393.645	133.187.047	17,06	20,57
RPH	5.061.758	91.212.485	5,26	5,55
RRC	0	-134.091.000	0	0,00
RTRA	1.404.554	23.037.153	5,75	6,10
SCD	0	256.395.838	0	0
SNO	0	88.410.039	0	0
SNP	2.255.228.600	18.890.892.162	10,66	11,94
SOCP	2.299.916	99.800.086	2,25	2,30
SPCU	11.047.413	128.786.567	7,90	8,58
SRT	5.035.956	13.152.686	27,69	38,29
STIB	7.199.501	260.042.571	2,69	2,77
STZ	4.967.730	167.543.309	2,88	2,97
TBM	23.500.980	67.520.493	25,82	34,81
TEL	943.492.527	2.468.483.557	27,65	38,22
TGN	75.147.643	3.262.877.964	2,25	2,30
TRP	35.999.810	130.073.871	21,68	27,68
TUFE	17.119.011	173.052.703	9,00	9,89
UAM	7.310.786	46.546.752	13,57	15,71
VESY	153.352	18.597.132	0,82	0,82
VNC	62.321.559	88.234.850	41,39	70,63

Source: www.bvb.ro, Authors' processing

Annex 2: Determination of liquidity ratios

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Company Name (Trading symbol)	Current assets	Inventories	Current liabilities	Cash and bank accounts	Short-term investments	Current ratio	Quick ratio	Cash ratio
ALR	931.837.290	447.520.845	245.819.828	254.511.559	0	379,07	197,02	103,54
ALT	59.075.202	20.546.081	64.800.322	376.896	341.760	91,16	59,46	1,11
ALU	61.662.978	14.592.025	15.821.444	19.109.137	0	389,74	297,51	120,78
AMO	32.751.343	12.078.850	19.772.384	19.052	0	165,64	104,55	0,10
APC	54.037.475	20.506.976	18.260.393	18.127.800	0	295,93	183,62	99,27
ARM	13.633.976	12.078.850	6.246.013	228.389	1.221.728	218,28	24,90	23,22
ARS	85.100.086	15.474.466	21.792.580	439.799	37.113.524	390,50	319,49	172,32
ART	427.981.211	215.065.774	164.111.746	9.535.257	1.099.825	260,79	129,74	6,48
ARTE	89.792.940	48.218.297	72.795.812	3.539.505	14.397	123,35	57,11	4,88
ATB	273.949.313	41.932.333	147.660.127	5.339.857	0	185,53	157,13	3,62
BCM	14.260.861	180.829	492.398	2.234.049	11.178.978	2.896,21	2.859,48	2.724,02
BIO	116.257.902	15.231.010	26.547.462	736.337	73.492.034	437,92	380,55	279,61
BRM	13.284.196	11.655.151	6.259.537	29.847	0	212,22	26,03	0,48
CAOR	11.783.174	131.627	8.797.100	9.606.415	0	133,94	132,45	109,20
CBC	18.416.135	10.266.594	8.779.072	362.388	18.720	209,77	92,83	4,34
CEON	11.289.316	7.610.260	55.375.589	1.631.892	0	20,39	6,64	2,95
CGC	13.103.349	8.663.546	63.623.314	371.813	0	20,60	6,98	0,58
CMCM	12.790.287	1.376.300	7.493.163	1.482.873	0	170,69	152,33	19,79
CMF	54.222.451	22.996.245	50.963.383	4.061.680	0	106,39	61,27	7,97
CMP	164.784.778	55.605.002	123.195.195	3.488.210	0	133,76	88,62	2,83
CNTE	8.254.737	1.894.090	1.415.788	4.369.684	0	583,05	449,27	308,64
COMI	83.894.762	14.780.100	42.147.476	15.031.391	0	199,05	163,98	35,66
COS	296.674.042	160.842.006	589.348.406	41.317.864	345.889	50,34	23,05	7,07
COTE	250.499.814	19.509.879	67.904.538	1.328.900	200.335.428	368,90	340,17	296,98
COTR	37.136.854	26.836.115	20.628.933	4.374.801	0	180,02	49,93	21,21
DAFR	138.932.918	51.454.914	113.120.356	4.374.801	0	122,82	77,33	3,87

ECT	7.672.353	2.778.599	3.079.133	644.376	0	249,17	158,93	20,93
EFO	21.494.893	2.708.150	17.589.256	7.934.697	654.496	122,20	106,81	48,83
ELGS	37.696.726	17.691.551	20.136.122	3.720.512	8.885.193	187,21	99,35	62,60
ELJ	17.905.559	10.350.588	2.794.715	1.942.714	4.802	640,69	270,33	69,69
ELMA	89.878.043	21.518.630	51.866.006	12.302.452	179.983	173,29	131,80	24,07
ENP	26.296.479	7.715.933	17.831.316	158.227	0	147,47	104,20	0,89
EPT	128.014.614	18.464.606	127.323.860	5.208.461	1.818	100,54	86,04	4,09
IMP	317.541.504	258.299.960	44.418.653	8.915.228	0	714,88	133,37	20,07
MECF	25.426.598	7.747.394	6.981.407	10.358.837	528.832	364,20	253,23	155,95
MEF	24.991.134	13.464.910	4.229.947	6.197.363	0	590,81	272,49	146,51
MJM	11.173.121	2.876.496	42.438.378	1.229.957	0	26,33	19,55	2,90
OIL	16.477.888	2.876.496	26.578.205	1.066.463	0	62,00	51,17	4,01
OLT	322.309.460	101.313.664	2.009.452.066	3.326.508	2.420	16,04	11,00	0,17
PEI	57.875.920	52.918.968	26.921.671	1.506.155	0	214,98	18,41	5,59
PPL	41.076.810	4.992.598	2.790.052	1.033.561	24.217.981	1.472,26	1.293,32	905,06
PREH	63.934.415	12.381.839	33.989.364	14.699.915	0	188,10	151,67	43,25
PTR	82.689.222	5.822.873	11.738.025	16.709.881	0	704,46	654,85	142,36
RMAH	126.639.012	24.358.494	120.614.152	15.082.162	0	105,00	84,80	12,50
ROCE	39.587.745	11.017.892	74.275.264	8.672.653	0	53,30	38,46	11,68
RPH	318.325.730	44.273.210	292.018.475	25.404.405	0	109,01	93,85	8,70
RRC	2.262.802.500	906.137.452	6.617.973.868	43.062.148	0	34,19	20,50	0,65
RTRA	26.076.947	9.873.752	23.421.356	280.157	0	111,34	69,18	1,20
SCD	261.932.403	25.474.665	78.500.876	10.227.387	0	333,67	301,22	13,03
SNO	54.989.153	32.684.422	7.767.081	1.743.302	14.428.783	707,98	287,17	208,21
SNP	5.251.216.086	1.695.805.503	4.710.750.374	567.026.496	0	111,47	75,47	12,04
SOCP	50.344.351	1.518.066	3.955.210	2.673.494	36.019.601	1.272,86	1.234,48	978,28
SPCU	34.810.466	10.809.772	18.756.749	5.695.384	0	185,59	127,96	30,36
SRT	17.081.605	3.442.061	13.052.804	881.031	1.005.093	130,87	104,50	14,45
STIB	153.079.474	46.457.765	112.055.012	2.535.990	13.351.564	136,61	95,15	14,18
STZ	8.080.611	3.081.180	6.614.479	605.733	0	122,17	75,58	9,16
TBM	40.396.433	31.462.798	67.714.785	1.463.811	0	59,66	13,19	2,16
TEL	1.547.821.435	41.723.456	1.755.883.953	178.684.658	126.078.719	88,15	85,77	17,36

TGN	686.250.255	43.247.769	708.584.237	19.154.501	255.607.046	96,85	90,74	38,78
TRP	79.856.837	30.013.441	66.806.132	2.501.319	0	119,54	74,61	3,74
TUFE	15.835.710	909.212	3.931.462	13.222.585	100	402,79	379,67	336,33
UAM	46.193.959	22.968.122	42.993.393	1.787.067	0	107,44	54,02	4,16
VESY	23.099.179	9.717.323	24.611.734	1.157.131	0	93,85	54,37	4,70
VNC	63.242.222	22.546.777	74.129.826	870.784	145	85,31	54,90	1,17

Source:www.bvb.ro, Authors' processing