ANALYSIS OF BANKRUPTCY RISK

ANALIZA RISCULUI DE FALIMENT

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Abstract: *In the appreciation state of financial health of company, the financial diagnosis has the objective major the evaluation risk afferent his activity. Some among these riskiness can point out the fragility of the company and others ones can prefigure just the bankruptcy. The risk notion has an important role in the future prefiguration of the company and in the estimation the possible fluctuations of the installment of the profitableness with help of the previsions, starting from the signals offered of the analysis position passed. Bankruptcy risk represents the possibility as the company to be in the incapacity of the pay and, accordingly, to fail. Behind to realize studies in SUA and France it showed that, for the estimation of a bankruptcy company, can be used-up accounting methods and banking methods. The accounting methods used in the case of comparative analyses in times for estimation future evolution of the activity. The banking methods find out the risk of bankruptcy means the notes of synthetic risks obtained on the base of the statistical methods of the discriminating analysis. These statistical methods permit the determination of the scoring - function which classify the companies in vulnerable and healthy.*

Rezumat: *În aprecierea stării de sănătate financiară a întreprinderii, diagnosticul financiar are ca obiectiv major evaluarea riscurilor ce îi însoţesc activitatea. Unele dintre aceste riscuri pot semnala fragilitatea întreprinderii, iar altele pot prefigura chiar falimentul. Noţiunea de risc are un rol important în prefigurarea viitorului întreprinderii şi în estimarea fluctuaţiilor posibile ale ratei rentabilităţii cu ajutorul previziunilor, pornind de la semnalele oferite de analiza situaţiei trecute. Riscul de faliment reprezintă posibilitatea ca o întreprindere să intre în incapacitate de plată şi, prin urmare, să fie declarată falimentară. În urma unor studii realizate în SUA şi Franţa s-a arătat că, în vederea previzionării falimentului unei întreprinderi, pot fi utilizate metode contabile şi metode bancare.Metodele contabile se folosesc în cazul analizelor comparative în timp în scopul estimării evoluţiei viitoare a activităţii. Metodele bancare descoperă riscul de faliment prin intermediul unor note de risc sintetice obţinute pe baza unor metode statistice de analiză discriminantă. Aceste metode statistice permit determinarea unei funcţii-scor, a cărei valoare clasifică întreprinderile în vulnerabile şi sănătoase.*

The main causes that lead to the bankruptcy of a company can be classified into the following two categories (Niculescu, 2005):

- External causes:

- Increase in the internal and external competition;
- The appearance of substitute products;
- Loss of an important customer;
- Bankruptcy of an important provider for specific materials, pieces, subsystems, that are essential for the company's activity;

- Bankruptcy of a bank with which the company used to have significant financial relations;
- The appearance of regulations regarding environmental safety and protection;
- Continuous decrease of the stock exchange quotation.

• Internal causes:

- A rotation of stocks and customers lower to that of the norms in the company's activity field;
- The use of inferior margins to those of the norms in the company's activity field;
- Financing investments with sources meant for exploitation;
- Repeated losses from exploitation;
- The impossibility of renewing loans.

An evaluation of the company's stability and of its possibility to have losses, which would anticipate the degradation of its financial situation up to the risk of bankruptcy, could be achieved using indicators that express the quality of its economical and financial activity, such as (Petrescu, 2004):

• Patrimonial solvability, whose value vas to be over 0.3 and to have an increasing evolution. A value under 0.3 represents an alert that should determine prudence from the part of the financing bank, as the company is on the verge of bankruptcy;

• Liquidity, whose value has to be greater than 1 in order to indicate a resource supplement that could be used to counter-balance incidents that may appear in the evolution of the floating capital, that is, a positive trading capital;

• Treasury, which expresses the company's ability to finance itself using stable sources, if its value is positive. A negative treasury implies a resort to bank credits for current payments, which in its turn indicates financial difficulties on the short term;

• The rate of financial effectiveness is favored by resorting to loans, as a consequence of a positive financial leverage effect.

MATERIAL AND METHODS

According to several studies performed in the US and in France, both accounting and banking methods can be used to predict the bankruptcy of a company. If the accounting methods are used for comparative analyses over time, with the purpose of estimating the future evolution of the company's activity, banking methods reveal the risk of bankruptcy using synthetic risk degrees based on statistical methods of discriminatory analysis, allowing the determination of a score function whose value classifies companies into vulnerable and healthy.

RESULTS AND DISCUSSIONS

The score function is computed using a set of financial rates obtained for companies that behaved differently when facing a bankruptcy risk.

Several scoring (computing) methods are known, and the best known are: Altman, Conan-Holder, the method of the Bank of France, the method of the Romanian Commercial Bank, etc.

The Altman model was designed in 1968 in the US, and it was the first score function that allowed anticipating 75% of bankruptcies 2 years before they occurred.

The score function (Z) includes 5 variables (rates) and has the following expression:

$$Z = 1.2R_1 + 1.4R_2 + 3.3R_3 + 0.6R_4 + 0.999R_5,$$

where:

$R_1 = \frac{Floating\ assets}{Total\ assets}$ expresses the weight of the floating capital in the total of assets and measures the company's flexibility and its effective usage of the trading capital;

$R_2 = \frac{\text{Re}invested\ profit}{Total\ assets} = \frac{Self-financing}{Total\ assets}$ indicates the ability of the company's internal financing;

$R_3 = \frac{Gross\ profit}{Total\ assets} = \frac{Exploitation\ result}{Total\ assets}$ measures the rate of return of the assets;

$R_4 = \frac{Stock\ capitalization}{Total\ debt} = \frac{Market\ value\ of\ owned\ capital}{Total\ debt}$ reflects financial independence (autonomy);

$R_5 = \frac{Sales}{Total\ assets}$ expresses the rotation speed of the assets (number of rotations).

The company vulnerability according to its score can be evaluated according to the data in the table below:

Table 1

The Altman Model

Value of the Z score	State of the company	Bankruptcy risk (%)
Z > 2,675	Good - solvability	Low – non-existent
1,81 < Z < 2,675	Precarious - difficulty	Non-determined
Z < 1,81	Difficult - insolvability	Imminent - maximum

The Conan-Holder model was designed in 1978 on a sample of 190 small and medium companies, of which half experienced bankruptcy between 1970-1975.

The score function includes 5 variables (rates) an is expressed as follows:

$$Z = 0.24R_1 + 0.22R_2 + 0.16R_3 - 0.87R_4 - 0.1R_5,$$

where:

$$R_1 = \frac{Gross\ exploitation\ surplus}{Total\ debt}$$

$$R_2 = \frac{Permanent\ capital}{Total\ assets}$$

$$R_3 = \frac{Achievable\ and\ available\ values}{Total\ assets} = \frac{Floating\ assets \quad Stocks}{Total\ assets}$$

$$R_4 = \frac{Financial\ expenses}{Sales} \quad R_5 = \frac{Personnel\ expenses}{Value\ added}$$

The company's vulnerability according to the score obtained is evaluated according to the data in the table below:

Table 2

The Conan-Holder Model

Value of the Z score	State of the company	Bankruptcy risk (%)
Z > 0,16	Very good	< 10 %
0,1 < Z < 0,16	Good	10 ÷ 30 %
0,04 < Z < 0,1	Alert	30 ÷ 65 %
- 0,05< Z < 0,04	Danger	65 ÷ 90 %
Z < - 0,05	Failure	> 90 %

The model of the Balance Pool of the Bank of France has been designed based on 3000 industrial companies 3 years before their bankruptcy, between 1975 – 1980.

The model uses a number of 8 variables (rates) and has the following expression:

$$100Z = -1.255R_1 + 2.003R_2 - 0.824R_3 + 5.221R_4 - 0.689R_5 - 1.164R_6 + \\ + 0.706R_7 + 1.408R_8 - 85.544,$$

where:

$$R_1 = \frac{Financial\ expenses}{Gross\ exploitation\ surplus}$$

$$R_2 = \frac{Stable\ ressources}{Invested\ capital} = \frac{Permanent\ capital}{Total\ assets}$$

$$R_3 = \frac{Self\text{-}financing\ ability}{Total\ debt} \quad R_4 = \frac{Gross\ exploitation\ surplus}{Sales}$$

$$R_5 = \frac{Commercial\ debts}{Provisioning} \times T = \frac{Medium\ provider\ balance}{Goods\ purchase} \times 360$$

$$R_6 = \frac{Modification\ of\ the\ value\ added}{Vad_0} \times 100 = \frac{Vad_1 - Vad_0}{Vad_0} \quad 100$$

$$R_7 = \frac{Medium\ customer\ balance}{Sales} \quad X\ 360 \quad R_8 = \frac{Corporeal\ investments}{Value\ added}$$

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The company's vulnerability according to the score obtained is evaluated according to the data in the table below:

Table 3

The Model of the Balance Pool of the Bank of France

Value of the Z score	State of the company	Bankruptcy risk (%)
Z > 0,125	Normal	10 ÷ 45 %
- 0,25 < Z < 0,125	Unsure	45 ÷ 70 %
Z < - 0,25	Risky	70 ÷ 100 %

The Model of the Commercial Bank of Romania uses a set of rates and performance indicators to establish the company's reliability based on a score grill with 6 criteria:

- Patrimonial liquidity: $$Lp = \frac{Short\text{-}term\ assets}{Short\text{-}term\ liabilities}$$;
- Solvability: $$S = \frac{Owned\ capital}{Liabilities}$$;
- Financial effectiveness: $$Rf = \frac{Gross\ profit}{Owned\ capital}$$;
- Rotation of floating assets: $$Nac = \frac{Sales}{Floating\ assets}$$;
- Dependence on provision markets (A) and on sale markets (D) – internal and external;
- Guarantees (guaranteed deposits in Romanian lei and in other currencies, deposits, mortgages, goods purchased with credits, debt transfer).

In the case of this model, the criteria for evaluating the company's reliability are scored with points that, together, are used to classify the companies into 5 categories (from A to E), according to which their credibility is evaluated.

The score obtained by the companies reflects their economic and financial state, as well as the risk for insolvability, and the companies can be included in one of the 5 reliability categories, which allows it to be granted credits or not:

Table 4

The Model of the Commercial Bank of Romania

Category	Total points	Economic – financial state – degree of risk
A	> 20	Very good – credits can be granted
B	16 ÷ 20	Good - credits can be granted
C	11 ÷ 15	Variable – demonstrates high risk
D	6 ÷ 10	High risk – no guarantees for granting credits
E	0 ÷ 5	Very precarious - no guarantees for granting credits

According to this grill, companies in categories A and B have a good economic and financial situation, and they are reliable enough to be granted bank credits.

Companies in category C have a high degree of risk and their reliability concerning credits imposes relatively high risk insurance. These companies have to be supervised regarding their solvability, so as to recover credits from the first signs of suspicion.

The reliability of companies in categories D and E does not offer any guarantees, so that these companies cannot benefit from credits that they could return in due time.

CONCLUSIONS

Bankruptcy is a constitutive part of the competitive business environment. The risk of bankruptcy represents the possibility that a company can no longer perform payments, which, according to specialists, is process that can be predictable for about 70% of the cases, based on symptoms that anticipate their failure.

In order to predict bankruptcy, both accounting and banking methods can be used, whose purpose is to determine the financial reliability of the analyzed company.

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