

CONSIDERATIONS ON ENTITY'S RISK ANALYSIS

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ABSTRACT: *In the present paper, because of the complexity of this topic, the purpose is to discuss the main aspects involved by risk analysis; starting with few conceptual approaches about risk and to outline the contributions about methods to assess different risks categories, especially methods to assess bankruptcy risk prediction (entity insolvency) from economic literature. The methods used to estimate bankruptcy risk are based on the score function which helps to find if an entity is confronted with financial difficulties. The score functions are a diagnosis method elaborated relying on the discriminant analysis, allowing to assess and to predict the bankruptcy risk of the entity using a set of relevant financial ratios.*

KEY WORDS: *risk, score function, bankruptcy risk, Z score, risk prediction, solvability, assessment methods*

JEL CLASSIFICATION: *G 30, G 33, D 22, M 49.*

1. INTRODUCTION

The activity of each economic entity is managed under different risk conditions, these risks being more or less known, easier or more difficult to avoid; so that for any economic activity is useful and necessary to identify and assess all the risks which may arise, to reduce or eliminate risk causes, accepting only those risks that affect only in small measure the economic activity of the entity. Insufficient knowledge of risk causes, incorrect assessment methods, the lack of adequate protection against its will directly affect the final results of the entity's activity.

2. THE CONCEPT OF RISK

According to the explanatory dictionary of the Romanian language (DEX), the word risk comes from the French word "risque" and means "the possibility of reaching a distress, of having suffered a loss or trouble", so a possible danger.

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In the economic literature different authors were formulated concepts on risk in different ways:

- "The concept of risk means a wide range of uncertainty about the future of an economic activity "(Mihalciuc);
- The risk "the variability of possible outcomes depending on an uncertain event" (Negoescu, 1995);
- Risk "is the probability of occurrence of an undesirable event" (Giurgiu, 1995);
- According to Băileșteanu, risk means "profit variability in comparison with the average profitability during the last financial periods, risk being nothing but the company incapacity to adapt in time and with the minimum cost to the changes in environmental conditions" (Băileșteanu, 1998);
- any investment involves risk, and the higher the risk, the greater increase the requirement of invested capital remuneration (Toma, 2001);
- Risk in a general sense, means "the variation of the result obtained under the environmental pressure, it represents the potential damage incurred on: assets, heritage, interests and economic activities" (Mihai, 1997);
- The risk can be defined as "the possibility that losses to be greater than expected" (Hedgetts, 1994);
- In a synthetically manner, risk - inherent in any activity - means "environmental variability of earnings under pressure" (Niculescu, 2003).

The risk is related to a phenomenon that arises from some circumstances for which the decision-maker is able to identify possible event, and even the probability of occurred that event, without being able to specify exactly which of these events will actually occur.

In terms of causes that can generate risk, these are multiple, like: the specificity of the economic activity performed; competition; managerial errors and mistakes, relations with customers, suppliers or financial institutions; incorrect information or lack of information; force majeure or unforeseeable circumstances.

Depending on the specificity of the economic activity performed, the major risks possible to affect an entity are: the operational risk, the financial risk, the commercial risk, and bankruptcy risk. All these types of risks could generate major consequences.

Operational risk expresses the company's ability to adapt to time and with the lowest cost to environmental variations, reflecting a change in value because of losses occurred for inadequate decisions in economic activity performed. Operational risk is evaluated using breakeven, which measures flexibility of the entity in relation to working conditions. A breakeven analysis determines at what point the income matches the expenses and overheads, and can be considered a powerful tool in decision making process, planning and expense control.

The financial risk expresses the variability of the results due to changes in the financial structure of the company.

In order to assess operational risk and financial risk entities can use leverage. Companies use leverage to increase both their return on assets (ROA) and their return

on owners' equity (ROE). There are two types of leverage: operational leverage to increase ROA and financial leverage to increase ROE (Friedlob & Schleifer, 2003).

Financial leverage use, as a source of capital, debt instead of or in addition to owners' investment. The right amount of leverage can affect the company favorably, and too much debt can be unfavorable. The presence of debt increases a company's risk and thus its costs of additional capital, but may also increase its ROE. The right amount of debt for a company depends on the circumstances, like what debt-to-equity amounts are typical for the industry or what amounts may be included in debt covenants. (Friedlob & Schleifer, 2003).

From the multitude of risks the most important to be considered is the bankruptcy risk, which can be caused by the appearance of all the others types of risks.

3. BANKRUPTCY RISK ANALYSIS

Bankruptcy risk is caused by the degradation of the financial situation, being closely connected to the solvency of an entity. Solvency shows entity's ability to survive over time, to face with medium and long term liabilities. Solvency measure financial security of a company relative to its creditors and financial institutions, and the aim of measuring solvency is to detect earlier signs of company's financial difficulties. (Monea & Guță, 2011).

Bankruptcy risk is related to the difficult state of the enterprise, considered as a permanent financial crisis situation. From a juridical viewpoint, an enterprise is in difficulty when it is in an arrested payment situation, no longer being able to meet the due debts and, in this case, the law stipulates the reorganization or dissolution of the enterprise (Petrescu & Mihalciuc, 2009).

Assessment of solvency and bankruptcy risk are dependent on cumulated factors and causes which could be internal or external one, such us:

- sector of activity;
- the life cycle of activity;
- the characteristics of the environment: economic, financial, fiscal, social, legal, ecological;
- entity size;
- capital structure;
- loss or bankruptcy of an important client, of a key supplier or of the bank where the entity has its main account;
- the frequency of difficulties in paying obligations;
- the deterioration of the rotation of circulating assets;
- erroneous policy in the field of commercial credit
- an aggressive policy of the competition;
- the incapacity to keep up with the changes in technology, or changes in consumer preferences;
- operating low productivity machinery and equipment that overcharges the production
- less competitive products and services;
- inappropriate management and quality management;

- repeated losses in the operating activity
- inadequate communication.

In order to assess and predict bankruptcy risk we can consider few methodological instruments:

- static analysis using balance sheet;
- functional analysis based on flows;
- strategic analysis tools based on strategic analysis matrices (BCG, ADL, etc.) that allow approach financial equilibrium and risk in comparison with the entity's activity and its competitive position;
- discriminant analysis based on score functions.

The method of score functions is used to provide a predictive model for assessment of the bankruptcy risk and it is based on discriminatory analysis. In order to build a score model has to be followed several steps:

- a selection of financial ratios reflecting entity financial health;
- to compare the evolution of the indicators (ratios) chosen on two categories of entities (from the same industry): a group of entities facing financial difficulties and a group of entities without any financial problems;
- to elaborate a predictive model combining those financial ratios that have a permanent and strong impact;
- to set the intervals based on observations concerning the possibility of bankruptcy risk manifestation;
- the score for each entity is determined by the function, and depending on its score an entity could be classified as bankrupt or non-bankrupt.

The score is a grade assigned to an entity and reflects, globally and unitary, the degree of vulnerability or of financial wealth (Buşe&al.2010).

The scoring methods for assessing and predicting bankruptcy risk were established by specialists of;

- the Anglo-Saxon schools (Model Beaver, Model Altman, Model Edminster, Model Diamond, Model Deakin, Model Springate, Model Ohlson, Model Zavgren, Model Fulmer, Model Koh, Model Shirata, Mod Credit – men or Security – analysis);
- the continental schools (Model Yves Collongue, Model Connan Holder, Model's Balances of the Central Bank of France, Model of French Trade Credit, Model Accountants Agree -CA Score, Model Scor Function AFDCC 2).

Romanian schools of economic-financial analysis have contributed to adapting score methods to the needs of the Romanian economy, developing this field of research.

The models well known of the Romanian schools of economic-financial analysis are:

- Model Manecuță and Nicolae (1996);
- Model B – Băileşteanu (1998);
- Model I – Ivonciu (1998);
- Model I. Anghel (2000);
- Model of Romanian Trade Bank.

Model Manecuță and Nicolae (1996) (Anghel, 2002). This model has been proposed for the metallurgical industry. The model is based on a solving matrix, necessary for developing a score function by means of the empirical Pearson ratio for choosing the discriminatory financial rates.

Financial variables considered in this model are the following: the financial expenses rate; the rate of covering the invested capital; debt reimbursement capacity; gross operating margin rate; the average duration of the supplying credit; the global indebtedness rate; the commercial claim rate; the physical investment rate; the average duration of the client credit; the influence of the need for working capital; the stocks rate.

The Z score function used has the following relation:

$$Z = -0,02395 R_1 - 0,54604 R_2 + 0,01263 R_3 + 0,33901 R_4 + 0,04745 R_5 + 0,01752 R_6 + 0,02194 R_7 + 0,71249 R_8 - 0,15459 R_9 - 0,09855 R_{10} + (23) 0,02751 R_{11} - 0,48437 R_{12} - 0,08536 R_{13} + 0,03609 R_{14} \quad (1)$$

The decision rule of the score function established by the authors is:

- $Z > 1,56$ entities without any financial difficulties;
- $Z < -1,56$ entities with deficiencies.

Model B – Gheorghe Băileșteanu (1998). Starting from traditional studies, the author considered that the occurrence of bankruptcy depends on the following factors: the impossibility of paying current obligations, lack of financial resources for reimbursement of loans, delays in collecting of the client credit, and registered losses.

The Z score function used has the following relation:

$$B = 0,444 G_1 + 0,909 G_2 + 0,0526 G_3 + 0,0333 G_4 + 1,414 \quad (2)$$

where:

- G₁ – intermediate liquidity;
- G₂ – solvency;
- G₃ – rotation of client credit;
- G₄ – profitability

B can registered a maximum value equal to 4 and a minimum value equal to -1,4.

Depending on the calculated value of B it is considered:

- $B < 0,5$ – high bankruptcy risk;
- $0,5 < B < 1,1$ – restricted area ;
- $1,1 < B < 2,0$ – intermediate area ;
- $B > 2,0$ – favorable area.

Model I - Paul Ivonciu (1998). This model is based on a set of six indicators (financial ratios), and proposes another score function – I function – to respond to the specificity of the Romanian economy. For the financial ratios were established minimum and maximum values, based on their utilities.

The proposed function I is:

$$I = 0.033r_1 + 5.555r_2 + 0.0333r_3 + 0.71729r_4 + 1.333r_5 + 4r_6 - 1.66032 \quad (3)$$

where:

- r1 - asset rotation speed;
- r2 – total revenue profitability;
- r3 – claims rotation;
- r4 - debt reimbursement capacity;
- r5 –quick liquidity;
- r6 - financial steadiness margin

The value of the I function is between a minimum value equal to -1,66032 and a maximum value equal to 6.

The intervals for the insolvability state in that case of the I score function are the following:

- $I < 0,0$ imminent bankruptcy;
- $0,0 < I < 1,5$ high bankruptcy risk;
- $1,5 < I < 3,0$ uncertain state;
- $3,0 < I < 4,5$ average bankruptcy risk;
- $4,5 < I < 6,0$ low bankruptcy risk;
- $I > 6,0$ highly unlikely bankruptcy risk.

Modelul A – Ion Anghel.

Starting from a sample of 276 entities, classified in to groups, one of non-bankrupt entities (60%) and the other one of bankrupt entities (40%), has developed a score function based on the discriminant analysis.

The analysis covered a period of four years between 1994 -1998, from a number of 12 industries of the national economy and has initially used a number of 20 economic -financial indices (including financial ratios and non-financial ratios).

Finally, have been established four financial ratios have been established for the A score function: revenue profitability; cash-flow debt covering ratio; debt to asset ratio; the period of paying off the obligations.

The score function A proposed by the author is:

$$A = 5,676 + 6,3718 X1 + 5,3932 X2 - 5,1427 X3 - 0,0105 X4 \quad (4)$$

where:

- X1 = Net Profit/Revenue
- X2 = Cash-flow/Assets
- X3 = Debts /Assets
- X4 = (Obligations/Turnover) x 360

Depending on the value registered for the A function entities are included in one of the following three situations:

- $A < 0$, bankruptcy/failure situation;
- $0 \leq A \leq 2,05$, uncertain state;
- $A > 2,05$, non-bankruptcy situation (healthy financial situation).

4. CONCLUSIONS

Risk is present anyway at any time and entities have to deal with it. The methods used to estimate and predict the possibility that a company being affected is different, from one type of risk to another. Bankruptcy risk concerns each which is confronted with financial difficulties.

Using financial ratios (efficiency indicators, financial statement ratios, liquidity and solvency indicators, and activity ratios) to predict bankruptcy risk is based on the fact that their systematic deterioration reflects the difficulties in entity's management. Score functions methods are based on values which we can estimate, but the development of a predictive model for bankruptcy risk is a difficult mission in the conditions of the Romanian economy.

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