USING STATISTICAL ANALYSIS FOR THE DETECTION OF THE COMPANY'S BANKRUPTCY RISK

UTILIZAREA ANALIZEI STATICE PENTRU DETECTAREA RISCULUI DE FALIMENT AL COMPANIEI

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Abstract: *The statistical analysis conducted under the liquidity and solvency ratios is, in essence, a balance sheet analysis which does not take into account the operational dynamics and the economic values of a business.*

Key words: *liquidity, solvency, financial lever*

INTRODUCTION

In the diagnosis of a company risk, bankruptcy risk analysis is of particular importance, designing the company's ability to honor its commitments both on short term and medium and long term. The study of the bankruptcy risk gets thus a double dimension, being carried out both in terms of liquidity and solvency plan of the enterprise.

MATERIALS AND METHODS

In the specialty practice and literature one consecrated three modalities of evaluation of the bankruptcy risk, i.e. the statistical analysis, the dynamic analysis and the analysis based on statistical-mathematical methods and techniques.

RESULTS AND DISCUSSIONS

The statistical analysis aims to diagnose the company's financial position with financial-patrimonial balance indicators, using data balance

sheet. According to financial theory, liquidity represents an asset quality to be converted into cash (or cash equivalents) in a period as short as possible and at minimum cost. In this context, an asset is said to be liquid if it is traded on an active market and if it can be quickly sold at the market's price.

From an enterprise point of view, the liquidity measures the ability of the company to meet its short term obligations. The liquidity of a company is of interest to its board (which aims at the operational conversion of the assets into disposable funds which to allow the payment of current debts), to the company's stakeholders (aware of the fact that maximizing the held value is directly dependent on the ability of business to generate positive cash flows), to company's creditors (to whom a good company liquidity may ensure a certain comfort regarding the recovering of the company's advanced funds) and to suppliers (interested in the company's capacity of paying its debts to them).

To evaluate the degree of liquidity of an enterprise one uses three financial ratios.

The *Current Ratio* is defined as the ratio between all assets of the enterprise and its short-term debt:

$$R_{curenta} = \frac{AC}{DTS} \qquad (1),$$

where $R_{curenta}$ is the current liquidity ratio. This indicator represents the most common measure of liquidity analysis of companies and is widely used in financial practice.

Regarding the indicator value, there is a broad consensus among experts who consider that the current ratio should necessarily be improper; under these circumstances, the company is able to repay its short term debt by making valuable its circulating assets.

At first glance, at least from the perspective of the company's creditors, we would be tempted to believe that the situation is the more favorable the greater the current liquidity is, as under these conditions creditors have a greater chance of recovering money if the company stocks should be valued as an emergency or the recovery of the company's debts would face difficulties. However, as shown by some authors, a high current ratio may be the result of unwise decisions of the company's management, the latter having a significant amount of disposable funds stuck in inventory (due to their optimal non-dimension or improper correlation with the firm's

current needs), debts (due to poor trade credit policy) or non-profit holding in the pay office. At the same time, a too high current liquidity could mean that the company does not use its full leverage potential.

A classic example of a company that faced liquidity problems due to a too high current liquidity, was Chrysler, in the second half of the '90s. With the weakening of the market value of the company, some shareholders had warned that the company had a high volume of short-term investments, which should have been sold and the resulting funds invested in the company or returned to shareholders. Chrysler's management refused, arguing that those funds had to be retained to deal with possible adverse economic circumstances. Finally, a compromise solution was found: Chrysler cut short-term investments, and its shares rose in value.

It is noteworthy that, in general, it is considered that the current ratio equaling 2 is good for most companies, since this ratio would allow a loss of value of current assets equal to 50% without affecting the company's ability to cover its current liabilities. The main problem with such an approach is that the current liquidity quantifies a static condition and assesses the liquidity of a business as if it were on the verge of liquidation. In reality, however, the current ratio does not propose a dynamic approach of the company, or the provision of a sufficient liquidity at all times is a priority of a company's management. Therefore, in assessing a company's liquidity, the current ratio should always be considered in conjunction with the cash flows that the company generates.

In the hypothesis that the current liquidity ratio records a fall, the company is likely to face difficulties (for example, if the diminution of the current ratio would occur as a result of the failure of the company to pay its debts to suppliers). However, there are cases where the current ratio reduction has no negative impact on company liquidity. In this regard, let’s consider the case of a firm that borrows from the bank to invest in short-term securities. If no other changes occur, the firm's circulating assets will remain constant, but the current ratio will be reduced.

In analyzing the company’s liquidity, the current ratio should be compared with the values registered by other companies with the same activity field, but also with the market average. One points out that the market average does not represent a magical figure that all companies have to report - in real economic life, there will be many performing companies

whose current liquidity will be placed over and under the market average. However, if the current ratio of a firm is situated too far from this average, it requires a careful analysis of the factors that caused this situation.

Another measure of a company's liquidity is provided by the *rapid ratio of liquidity* (acid test), calculated as the ratio of current assets (exclusively stock company) and debt with maturities under one year of involvement:

$$R_{rapida} = \frac{AC - ST}{DTS} \qquad (2),$$

where R_{rapida} is the rapid ratio.

The rationale behind the acid test is a test of a crisis situation in which the company would have to pay urgent short-term debt on condition that they are unable to turn to account stocks, these ones being the current assets with the lowest degree of liquidity.

The third liquidity ratio consecrated by the theory and the financial practice is *immediate ratio,* that takes into account the elements with the highest degree of liquidity of the company's current assets (i.e. cash assets consisting of cash and short-term financial investments):

$$R_{imediata} = \frac{AT}{DTS} \qquad (3),$$

where $R_{imediata}$ denotes the immediate liquidity ratio.

This indicator expresses that the proportion of the company's current debt can be honored only on a treasury assets basis, if unfavorable, the firm would face difficulties in the valuation of stocks and in the collection of receivables from its debtors.

Solvency concept refers to a company's ability to meet its long term obligations. Within the analysis of solvency, the company leverage occupies a central place, more precisely, it is about the extent to which equity and loan attracted resources combine themselves in the company's capital structure.

Making appeal to leverage to finance a business can have a positive consequence of the increase in financial profitability, if the company wins on the account of investments financed through borrowing more than the actual cost of those loans; one should say, however, that this increase in profitability is accompanied by a corresponding increase in the risk that the company is exposed to. In addition to lever effect, there are two important

implications of the leverage: firstly, financing the company through debts, shareholders can maintain control over the business without a supplementary supply of funds. Secondly, the creditors will carefully analyze the company's own funds, because the size of equity (both the absolute and especially as a share of total corporate funding sources) is a good indicator of credit risk.

Determining the optimal mix of equity and debt (i.e. one that ensures maximization of the company's market value) is extremely difficult. However, at each stage of the economic life of the company, the management aims at a target-structure of the company's capital, presumed to be the best. This target structure is, of course, variable in time, which affects the company's solvency.

The main indicator with which the solvency analysis operates, is the *leverage ratio*, which expresses the size of the part of the company financed by borrowed resources:

$$R_{indat} = \frac{DT}{AT} \qquad (4),$$

The higher the indicator value, the greater the risk assumed by the firm's creditors. It should however be noted that the leverage ratio is not a real indicator of the company's ability to repay its debts. This is because, first, balance sheet items are generally recorded at historical cost and do not reflect the current values of the market and, secondly, the leverage ratio does not give any information on the fluctuation of profits and / or cash flows of the enterprise, fluctuations that could affect its ability to honor its obligations to creditors.

A more "refined" alternative of the debt ratio centers round the company's debts reporting to its economic assets:

$$R_{indat} = \frac{DT}{AE} \qquad (5)$$

This amount represents a key element of the credit rating models built by companies like Moody's. In the literature there are numerous variations on the theme of the relationship (4), meaning that the leverage ratio can be determined taking into account certain categories of debt such as short-term debt (including or excluding commercial ones), only long-term debt. Anyway, the debt ratio is an indicator of great importance, since numerous

loan agreements establish for debtors maximal limits of the debt as a proportion from the company's assets, with all the shortcomings and problems raised by these practices.

Another measure of the risk of insolvency is represented by the *rata lever's ratio*, calculated as the ratio between the total debts of the company and its equity:

$$RL = \frac{DT}{CPR} \qquad (6),$$

in which RL = the lever's ratio. The indicator expresses the relative size of claims that creditors have on the company by reporting to the value of equity (shareholders' claims on the firm).

CONCLUSIONS

Although it is clear that the balance sheet may provide only a static image of a company's financial situation at a time, however, given the ease with which ratios presented above can be calculated makes them extremely popular in modern financial analysis.

Liquidity and solvency indicators have an appreciable utility as trend indicators when calculated for several periods of time. However, the analyzed ratio system fails to create an accurate picture of the company's ability to pay its creditors the interest rates and the capital ratios established on a contractual basis.

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