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## Models for Analyzing the Business Solvency under Economic Crisis Conditions

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*Managing the company’s financial equilibrium during a tough economic environment generated by the extension of the actual economic and financial crisis, must represent a major and constant preoccupation for the management. One of the fundamental indicators which have the capacity to emphasize the way in which the financial equilibrium, needed for the continuity of a company’s activity is ensured, is represented by solvency, on which we will discuss in the followings.*

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### The solvency role in maintaining the financial equilibrium

The continuity of a company’s activity is invariably conditioned by the ensuring and maintaining, in time, of some financial and structural equilibriums appropriate for the company’s specific activity, its environment, its market conditions in which it operates, and also specific to its medium and long term objectives. A company’s financial

equilibrium is given by its capacity to conduct its activity, in normal conditions, on short term but also on medium and long term, and these conditions can be ensured through an appropriate patrimonial structure and obviously through a financial structure that can ensure the payments of current and future debts on agreed term.

Romania's last year's reality, that emphasizes the current financial and economic crisis, has proved that most of companies that faced insolvency was determined by the lack of capacity to pay its debts on term, from which it results the importance of maintaining a financial equilibrium of a company, be it small, medium or of international size.

The state of equilibrium or disequilibrium of a company can be determined through a complex system of indicators from which we remind: solvency, liquidity, structural rates, financial rates, floating capital, financing the needed floating capital, etc.

Within this system of indicators which have the capacity to measure the state of equilibrium or disequilibrium of a company, solvency holds a central place through its capacity to reflect a company's possibilities to face its current and long term debts.

## **Models for analyzing a company's solvency**

As stated above, *solvency* expresses the capacity of an economic entity to face all its payments due, being in direct relation with its degree of indebtedness. Depending on the elements that are taken into account, solvency can be expressed through various. Thereby, in the followings we will stop on some methods of expressing solvency, with the mention that when creating and grounding these models was taken into consideration their utility in specific analysis made by the companies' management during instability periods generated by the economic crisis, but not only.

**General solvency ratio**, reflects a business capacity to face its due dates, both on short and long term, being determined as a ratio between total assets and total liabilities, after the relation:

$$R_{sg} = \frac{At}{Dt} \times 100 \quad (1)$$

in which:

$R_{sg}$  = general solvency ratio;

$At$  = total assets

$Dt$  = total liabilities.

This indicator is expressing the degree of covering the liabilities with the assets of a firm, reflecting ultimately its capability to transform them into liquidities to pay its due debts.

One of the inconveniences of this indicator is represented by the fact that in its determination the sum of assets is taken into consideration regardless their degree of liquidity. It is known the fact that a part of fixed assets can become liquid after a certain period of time or never. Under those circumstances, we propose to be taken into analyze by the firm's management also the following model of analyzing the general ration of solvency:

$$R_{sg} = \frac{At - Aim_n}{Dt} \times 100 \quad (2)$$

in which:

$Aim_n$  = non current unsaleable assets

This model takes into consideration only the saleable assets excluding from calculations those assets known as impossible to be capitalized in the time period that have been taken into consideration. Likewise, the indicator in the forms presented above, does not put into correlation the capability of meeting the liabilities due date with the possible terms of liquidity of the company's assets, especially of the fixed assets, aspect recommended to be taken into consideration by decision makers when analyzing the company's degree of solvency.

In the previously supported idea, to substantiate the previous model we consider that for periods of economic instability similar to that taken by companies in the current conjuncture of economic and financial crisis, could be taken into account the possibility of building a model of the immediately overall solvency ratio by excluding from the total assets those ones fixed in their entirety, regardless of their marketable weather. Such a model would be one of the following form:

$$R_{sgi} = \frac{At - Aim}{Dt} \times 100 \quad (3)$$

in which

$R_{sgi}$  = immediate general solvency ratio, at accounting values

Being a general indicator of characterizing a company's solvency, as its denomination indicates, in its classical determination and in normal conditions, the assets accounting value is taken into consideration, which can wrongly reflect the firm's true level of solvency, especially in conditions of economic crisis.

After what is known and practically demonstrated in this period of prolonged economic crisis, the main characteristic of this kind of periods is that, especially on medium term, the fixed asset's market value tends to decrease, in many cases, dramatic declines of the market value of this asset category being registered, and consequently this value to be lower than the accounting value, fact that leads to another level of the business solvency ratio.

Starting from this reasoning and taking into consideration the fact that, on short term, the current assets and the cash do not suffer a significant influence, regarding lowering its market value, in periods of economic crisis, except from extreme cases, we propose to build a calculation model for the general solvency ratio that would consider the elements mentioned above. Such model could have the following calculation:

$$R_{sg(p)} = \frac{At - (Aim_c - Aim_p)}{Dt} \times 100 \quad (4)$$

in which:

$R_{sg(p)}$  = General solvency ratio with taken into consideration the fixed asset's market value;

$Aim_c$  = Fixed assets at their accounting value

$Aim_p$  = Fixed assets at their market value

The practical inconveniences that the model of analyzing the general solvency rate and its derivatives presented above has, determined by the fact that for analysts and management it is important to have a more detailed knowledge of some aspects regarding solvency, determines us to propose for use in analyzing a firm's solvency the models below, models that we appreciate to be more expressive in giving more details about the solvency analysis, referring to the patrimonial solvency ratio and the potential solvency ratio.

**The financial solvency rate**, determined as a ratio between total assets and total financial liabilities, after the relation:

$$R_{sp} = \frac{At}{Dft} \times 100 \quad (5)$$

in which:

$Dft$  – total financial liabilities

It must be underlined the fact that this model of solvency ratio is recommended by the romanian authorities to be used in grounding the projects of accessing EU funds, and the total financial liabilities includes: short term and long term bank loans; other loans and assimilated debts; interest related to other loans and assimilated debts (Applicant's Guide, HG nr. 797/2012, page 31).

*The potential slovency rate*, expresses the notion of solvency more accurately, being a frequent indicator used in financial analysis and those made by banks in the lending process. This solvency indicator is determined as a ratio between owner's equity and medium term and long term liabilities, after the relation:

$$R_{sp} = \frac{C_{pr}}{Dml} \times 100 \quad (6)$$

in which:

$R_{sp}$  = potential solvency ratio;

$C_{pr}$  = owner's equity;

$Dml$  = medium and long term liabilities

The potential solvency ratio reflects the covering degree of medium and long term liabilities with the owner's equity a business has.

*The patrimonial solvency ratio*, expresses the covering degree of medium and long term liabilities, including obligations towards shareholders consisting in subscribed capital and other constitutive funds from owner's equity. This indicator is determined by the relation:

$$R_s = \frac{C_{pr}}{Dml + C_{pr}} \times 100 \quad (7)$$

in which:

$R_s$  = patrimonial solvency rate;

$C_{pr}$  = owner's equity;

$Dml$  = medium and long term liabilities.

Characteristic to this indicator is the fact that it includes, in the medium and long term liabilities, the shareholders subscribed capital, in order to protect it, taking into consideration the possibility of its withdrawal.

This indicator is frequently used in the analyzes made by banks in the lending process and in clients classification, being considered that the optimal value is between 40-60%, and a value under 30% means a critical situation for the unit concerned.

**The medium and long term indebtedness ratio**, expresses the ratio between medium and long term liabilities and unit's own resources and it's determined after:

$$R_{il} = \frac{Dml}{C_{pr}} \times 100 \quad (8)$$

in which:

$R_{il}$  = medium and long term indebtedness rate

$Dml$  = medium and long term liabilities;

$C_{pr}$  = capital, including reserves.

This indicator reflects the dependence degree of the unit regarded medium and long term receivables. Financial analysts use medium and long term indebtedness ratio in measuring the risks that the analyzed business can be exposed to.

Expressed through any of the indicators presented above, solvency constitutes an important indicator which characterize the financial performances of a company and its state of equilibrium or disequilibrium. The insufficiency of those indicators is represented by the fact that they reflect the situation from a static point of view, at a certain date. For the characterization of different financial statuses of the business, it is necessary the calculation of solvency indicators and to monitor their evolution in time.

Based on the things presented above, in the table below elements for calculation the solvency ratios are presented, taken from the financial situations of a business and the calculation of the solvency indicators through using the models we spoke about during this study.

## Calculation of solvency indicators

<b>Indicators denomination</b>	<b>Symbol/Relation</b>	<b>N-1</b>	<b>N</b>
Total assets, from which:	At	1.157.057	1.408.869
Fixed assets, at financial value:	Aim	657.404	645.482
Fixed assets, at market value	Aim(p)	491.505	327.197
Unsaleable fixed assets	Aim(n)	11.522	35.230
Owner's equity	Cpr	707.375	602.367
Capital	Cp	744.763	389.893
Total liabilities, from which:	Dt	565.621	906.202
Medium and long-term liabilities	Dml	141.387	227.578
General solvency ratio (%)	$At/Dt \times 100$	204,6	155,5
General solvency ratio affected by unsaleable fixed assets	$At-Aim(n)/Dt \times 100$	202,6	151,6
Immediate general solvency ratio	$At-Aim/Dt \times 100$	88,4	84,3
General solvency ratio with taking into consideration the fixed assets market value	$At - [Aim(c)-Aim(p)]/Dt \times 100$	175,3	120,4
Potential solvency ratio (%)	$Cpr/Dml \times 100$	497,5	264,7

Patrimonial solvency ratio (%)	$\frac{Cpr}{Dml+Cpr} \times 100$	83,3	76,6
Medium and long-term indebtedness ratio (%)	$\frac{Dml}{Cpr} \times 100$	20.1	37,8

The analysis of the solvency ratios for the example above indicates the fact that all the indicators show a decrease of the firm's solvency, which implies high attention from the management together and the necessity to adopt some measures that would lead to the restoration of the its financial equilibrium and would ensure the business continuity.

## References

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