

# DYNAMICS OF ECONOMIC AND FINANCIAL RISKS IN SME'S

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**Abstract:** The role that small and medium enterprises play in both developing and developed countries cannot be ignored and, therefore, their existence and survival it is a matter of major interest for both policy makers and researchers. Although there are several factors that can have a negative effect on the profitability, security and stability of the business, small and medium enterprises are increasingly exposed to new types of risks due to the recent global events. One of the main goals of every entrepreneur-owner is to identify these risks and prevent them before they become a major problem. The survival rate of an SME depends in most cases on the efficiency of the management process. Therefore, it is necessary to design a general picture that gives the management (entrepreneur - employer) a synthetic picture of the vulnerabilities of the company. The objective of the research is to obtain a practical working tool for SMEs, under the name of barometer for identifying and measuring economic and financial risks – thus improving the management process. The research is a methodological one, of predictive and stimulating type, oriented towards explanation and practical applicability. The idea started from the urgent need for management to identify at a reasonable time the areas of economic and financial risk, from which the disruptive factors of economic activities start – considering the fact that, unlike corporations, SMEs do not possess their own arsenal in terms of resources (financial, human, logistical, etc.) which leads to their increased vulnerability. The goal of this practical tool is to increase the survival rate of SMEs and therefore its profit.

**Keywords:** barometer, dynamics, economic and financial risks, SME.

## 1 INTRODUCTION

Small and Medium Enterprises contribute to economic growth, helps reduce unemployment and plays the role of stabilizer on the market. But, even in a developed market economy half of SMEs do not reach their fifth anniversary because risks play a decisive role in

companies from the moment of their establishment. There are very few cases when it comes to SME's where we can identify a risk-based management system, mostly because they work with limited staff in terms of number and training to avoid incurring costs. The survival rate especially for newly established SME depends in the most cases on the

efficiency of the management process. Recently I have developed a tool – Barometer for SME – that allows the identification of systemic and local dysfunctions in economic and financial flow. In this paper I will add to that tool – Barometer, which had only static indicators, dynamics of economic and financial risks in SME's.

## 2 THE PREMISES OF THE RESEARCH

SMEs deal with risk management, but not always in a repeatable or permanent way that supports the decision-making process. The objective of the research is to add to a practical working tool for SMEs recently developed, entitled: Barometer for Identifying and Measuring Economic and Financial Risks, which had only static indicators, dynamics of economic and financial risks.

The research is a methodological one, oriented towards explanation and practical applicability.

The data source of the input information in the barometer algorithm for identifying and measuring economic and financial risks is represented by financial accounting, more specifically, synthetic account statements or the general journal. The accounting statements and registers invoked are found in each economic unit, they are mandatory to drive.

This obligation is established by law, so they are common to all economic units, regardless of their size or object of activity.

## 3 SHORT DESCRIPTION OF THE BAROMETER

The practical working tool, with applicability at the level of SMEs, under the name of economic barometer for measuring the pressure under which risk factors act, through adjustments of economic and financial indicators uses the following indicators:

economic profitability, liquidity, degree of indebtedness and receivables turnover rate.

The barometer uses economic and financial-accounting information at a desired reference moment.

A package of rules, principles and elements were taken into account of diagnosing the economic and financial health for SMEs, such as:

- calculation of indicators at time "T" considered as a starting point (initially) to determine the state of economic equilibrium of the economic unit;
- establishing a score from 0 to 25 points, through which it will be observed the degree of deviation from the equilibrium state;
- an economic unit may collect a score between 0 and 100.

The following statements can be made based on the results obtained by applying the barometer on several SMEs:

- it can be used both in the sphere of production of goods and in that of the provision of services;
- it has as main purpose the determination of the economic and financial health of the economic units;
- it allows the identification of systemic and local dysfunctions in economic and financial flows;
- it shows the manager the financial position in which he is on a certain point in a time gap but also the level of the degree of self-management he has;
- it shows the direction of action - the immediate and firm decision - in restoring the balances, those that allow them to manifest the ability to continue the activity in conditions of sustainability;
- the management decisions will be sufficiently argued so that the uncertainties turn into calculable and determinable risks, and the risks can be assumed or even annihilated.

#### 4 DYNAMICS OF INDICATORS USED TO BUILD THE RISK IDENTIFICATION BAROMETER

In order to have a more accurate picture of the equilibrium of an economic unit at a given time, it is imperative to determine the temporal evolution, respectively, whether the economic and financial results have been improved in the current period compared to previous periods. For this, the ratio between the current value of the indicators (determined at month level) and the average of the last 3 months will be calculated. In other words, it is checked by what percentage the values of the indicators have changed in the current month compared to the average of the previous period.

Thus, for the first month of application of the risk identification and measurement barometer, the temporal evolution of the indicators will not be determined, not having a reporting basis. In the second month the values will be compared with those of the first month and in the third month comparisons will be made with the average of the first two months.

Starting with the fourth month, the described mechanism will be used in which comparisons will be made with the average of the last three months prior to the analyzed period.

Therefore, the evolution index of each indicator is calculated as the ratio between the current value and the average of the previous values, as detailed above, to be multiplied by 100. In addition to the previously established indicators (economic profitability, liquidity, degree of indebtedness and receivables turnover rate), the evolution of labor productivity will be calculated to determine whether or not the economic unit is improving in terms of the use of human resources.

In the following I will detail the reasoning for awarding scores for the dynamic evolution of the indicators on the basis of which the risk identification and measurement barometer is built.

#### 4.1 Profitability Dynamics

Profitability is appreciated as positive for an increasing evolution, from one period to another. When allocating the scores for the dynamic evolution of profitability, the following cases have been highlighted:

Table 1. Score the dynamics of profitability

Scoring obtained	max. 25 points	average 15 points	low 5 points	min. 0 points
Profitability values - positive	>=120%	101%	80%	0
- negative		<=50%		>=100%

In the analysis of the dynamic values of the profitability evolution indices, several situations must be taken into account.

a) the value of the profitability in the period from the moment of the analysis and the average with which it is compared are positive;

If the profitability increases by more than 20%, it is estimated that the economic unit is in a very good position, and is awarded 20 points.

If the indicator increases by 1%, then it will be awarded 15 points, and for the values of the indices in the range (101, .., 120, the equation of the line  $Y = (5x-220) / 19$  will be used.

For an increase of the indicator by 10.5%, a value in the middle of the range will be awarded 17.5 points.

An unfavorable situation is one in which the indicator decreases by 20%, in which case 5 points are obtained. Below this, the economic situation of the unit is critical, and the scores are given according to the equation  $Y = X / 16$ .

For a decrease of the indicator by 60%, an index of 40 is obtained which receives, according to the above, a number of 2.5 points.

For the interval of the index of (80, .., 101) the equation is:  $Y = (10X-695) / 21$ . For the value in the middle of the range of 90.5 which means a decrease in profitability by 9.5%, 10 points will be awarded.

b) the value of the profitability from the analysis period, as well as the average with which it is compared is negative;

In such a situation it is desirable that the value of the loss decreases from one period to another.

If the profitability has decreased by more than 50%, 15 points will be awarded. At the same time, if the modulus of profitability in the current period is higher than the modulus of the average in previous periods, zero points are obtained.

For the index range between (50, ..., 100), the equation is:  $Y = (300-3X) / 10$ , if the profitability in the current period is:

- ✓ positive, and the average of previous periods is negative, then 20 points are awarded;
- ✓ negative, and the average of previous periods is positive, 0 points are awarded.

#### 4.2 Liquidity Dynamics

Regarding the liquidity indicator, it is appreciated positively if it follows an increasing evolution, from one period to another. When allocating the points related to the dynamic evolution, the following hypostases were highlighted:

Table 2. Liquidity dynamics scores

Scoring obtained	max. 25 points	average 15 points	low 5 points	min. 0 points
if the dynamic liquidity index is	$\geq 120\%$	101%	80%	0

The table above shows that, when liquidity increases by more than 20%, the risks of non-compliance with the assumed obligations are minimal (the situation of insuring liquid assets is very good) and 20 points are awarded.

If the dynamic liquidity index increases by 1%, 15 points will be awarded and for the

values included in the interval (101, ..., 120) the equation of the line  $Y = (5x-220) / 19$  will be used. For example, for an increase of indicator with 10.5%, value in the middle of the range, 17.5 points are obtained.

An unfavorable situation is one in which the indicator decreases by 20%. The risks are high; therefore 5 points will be awarded. When the situation becomes critical and the scores are given according to the equation  $Y = X / 16$ , a decrease of the indicator by 60% will obtain an index of 40, which receives, according to the above, a number of 2.5 points.

For the interval of the index of (80, ..., 101) the equation is  $Y = (10X-695) / 21$ . For the value in the middle of the range of 90.5 which is interpreted by a decrease in liquidity by 9.5%, 10 points will be awarded.

In the analysis of the dynamic values of the profitability evolution indices, several situations must be taken into account.

#### 4.3 The Dynamics of the Degree of Indebtedness

The evolution of the degree of indebtedness is preferable to decrease from one period to another. This means that the risk of losing the degree of autonomy and financial management is higher. The reasoning on which the scores will be awarded is presented in the table below.

Table 3. Debt dynamics scores

Scoring obtained	max. 25 points	average 15 points	low 5 points	min. 0 points
if the dynamics of the degree of indebtedness index is:	$\leq 50\%$	99%	120%	$\geq 150\%$

From the table above it is observed that when the value of the indebtedness indicator

decreases by more than 50%, the maximum score is given, ie 20 points.

If the index increases by more than 150%, 0 points will be awarded.

If the value of the indicator has decreased by 1% compared to the previous period, 15 points will be awarded. For the interval (50, .., 99), calculate the score according to the equation  $Y = (1230-5X) / 49$ . For example, for the middle value of the range of 74.5%, 17.5 points will be obtained.

It is considered that, for a dynamic increase of 20% of the degree of indebtedness, the economic unit is in an unfavorable situation, with significant risks of losing financial self-management, a situation in which 5 points will be awarded.

For the interval (99, .., 120), the equation is  $Y = (1305-10X) / 21$  and for the value 109.5%, which means a dynamic increase by 9.5% of the indebtedness indicator, will be allocated 10 points.

For the interval (120, .., 150), the equation is  $Y = (150-X) / 6$  and for the value 135%, which means half the interval and an increase of 35%, 2.5 points are allocated.

#### 4.4 The Dynamics of the Rotation Speed of Receivables

Viewed in its dynamic evolution, the debt turnover indicator should decrease from one period to another, in order to assess an equilibrium situation in which the risks of non-collection or non-integration of liquid current assets, respectively, are minimal.

The rationale on the basis of which scores will be given for the dynamic values of the rotational speed indicator is presented in the table 4.

If the dynamic value of the degree of indebtedness indicator decreases by more than 40%, the maximum score will be given. It is considered a favorable situation, respectively,

minimum risks regarding the collection of receivables.

Table 4. The dynamics of the rotation speed of receivables

Scoring obtained	max. 25 points	average 15 points	low 5 points	min. 0 points
if the receivables turnover rate index is:	<=60%	99%	120%	>=195%

If the dynamic value of the indicator decreases by 1%, 15 points will be awarded.

For the interval (60, .., 99), calculate the score according to the equation  $Y = (1080-5X) / 39$ . For example, for the mean value of the range which would be 79.5%, 17.5 points will be obtained.

For a 20% increase in indebtedness, the economic unit is in a less favorable situation, in which 5 points will be awarded.

For the interval (99, .., 120), the equation is  $Y = (1305-10X) / 21$ , and for the value 109.5% (increase by 9.5%) 10 points are obtained.

It is considered that an increase of the indicator by more than 95% will determine the receipt of 0 points, which shows a critical situation regarding the establishment of means of payment. Thus, for the interval (120, .., 195), the equation is  $Y = (195-X) / 1$ , and for the value 157.5% (increase by 57.5%) 2.5 points are obtained.

#### 4.5 The Dynamic Evolution of Labor Productivity

Labor productivity, in a general approach, is the efficiency or fruitfulness with which the factor of labor production is used in economic activity.

Accelerating the growth rate of labor productivity is related to understanding its

content and significance, influencing factors and how to capitalize on those influences through the decision-making correction system.

The main factors that influence the degree of increase in labor productivity are:

- ✓ technical progress, respectively, the intensity of the technological process;
- ✓ improving the organization of management, production and work, respectively, the process of generalized innovation;
- ✓ qualification, professional development and increasing the skill of the executors, respectively, the investments in human resources.

The individual contribution of the employees to the achievement of the basic objective - a turnover on an increasing trend and a mass of profit increasing -, responds to the requirements of individual efficiency but also to the effect of organizational and functional measures taken by the company's management in economic processes. .

In the most general sense, labor productivity is determined by relating the economic effects (Turnover) to the number of participants in achieving the effects (average written number). This indicator shows the degree of employee participation in the achievement of turnover.

Labor productivity can be calculated using other calculation bases, expressed in physical units, such as: number of pieces obtained, km traveled, time norm, unit time, etc. As for our model - the risk identification and measurement barometer - we will calculate productivity as a ratio between turnover and the amount of staff costs.

Due to the fact that, at this moment we do not make an analysis in absolute values of the indicator, but introspection on its dynamic evolution, we will use this calculation formula because it is much closer to the calculation system of those other indicators but also the possibility of using common input data.

Within the risk identification and measurement barometer we chose an analysis of the possible cases of dynamic evolution of labor productivity for which we will award scores, as follows:

*- turnover increases and wage costs decrease, so productivity increases;*

This is a favorable situation as it denotes a higher mass of income with a minimum consumption of human resources, expressed in monetary units. Minimum 20 points will be awarded.

*- turnover and wage costs increase but also labor productivity increases;*

And this is a very good situation because the economic unit has developed its activity and, in no time, has increased its more efficient use of resources. 18 points are awarded.

*- both turnover and wage expenditures decrease, but labor productivity increases;*

In such a situation it can be stated that the economic unit has decreased its volume of activity but has increased its use of resources; it can be said that there has been an action to abandon activities or parts of them considered less efficient in terms of productivity. 15 points are awarded.

*- both turnover and wage costs increase but labor productivity decreases;*

For relevance, it is considered that the economic unit that uses the barometer, is in a process of development, expansion and increase its sales volume but also the number of employees, or is in an investment process using the staff before.

It can be stated that, even in such a situation of decreasing the degree of use of resources, in the next periods will reach a state of equilibrium. 10 points are awarded.

*- turnover and wage costs are declining but labor productivity is also declining;*

In this case, the economic unit the company loses a part of the activity even if it gives up the unproductive part of the employees but the degree of efficiency of the

remaining ones is decreasing. It is an unfavorable situation and only 5 points are awarded.

- *turnover decreases while the value of staff costs increases;*

Such a situation is the worst possible. The risks of economic and financial slippage are high because, in addition to declining revenues, spending has risen. Such a state denotes important imbalances and shows the lack of sustainability in the short and medium term. In this case no points will be awarded.

## 5 HOW TO USE THE BAROMETER

The barometer, as it was designed and made, is easy to use by managers, even if they do not have advanced economic training.

As a way of presenting the barometer, we proposed the excel solution, precisely to facilitate the widest possible access (of a large number of users) to such an instrument for identifying and measuring economic and financial risks, as it will be presented as follow.

January / February / March / April / May / June

Period
Fiscal value
Ec. profit
Circ. assets
Total debts
Curent debts
Claims
Net assets
Salary expenses

Figure 1. Barometer input data

The working algorithm in which the input data in the barometer are processed, the score values awarded and the way in which this

instrument provides a total value related to the reference period, represents the significant personal contribution in this research paper.

<i>Profitability evolution score</i>	<i>Liquidity evolution score</i>	<i>Evolution score degree of indebtedness</i>	<i>Rotation speed evolution score</i>	<i>Work productivity</i>	<i>Evolution of labor productivity score</i>	<i>Total evolution score</i>
Month 1						
Month 2						
Month 3						
...						
Month 24						

Figure 2. Scores evolution indicators

## 6 CASE STUDY

This chapter presents the situation for six months in one of the economic units in the processing industry (value added), as follows:

<i>Period</i>	<i>Economic profit</i>	<i>Liquidity</i>	<i>Degree of indebtedness</i>	<i>Recivables turn-over rate</i>	<i>Productivity labor</i>	<i>TOTAL DYNAMIC SCORING</i>
January	x	x	x	x	x	x
February	20.00	16.91	11.14	3.77	11.27	61.82
March	20.00	11.88	13.17	15.34	10.57	80.39
April	0.00	12.21	12.94	4.50	13.53	44.65
May	13.40	13.14	13.65	10.14	12.48	70.32
June	20.00	15.36	13.87	15.64	10.91	84.87

Figure 3. Example of cumulative scores on dynamics

Following the application of the reasoning described in the previous chapters, add the score obtained in the current month which can record values between 0 and 100, and check the place or situation in which it falls, at intervals:

### **score > = 60**

If the total score is over a range of more than 60, it can be estimated that the economic unit is in a position of economic equilibrium and financial, with minimal risks acting on the activity carried out. Therefore, this size indicates a favorable situation.

Any manager should know that no situation is fully favorable, that there is always room for improvement. Therefore, it will look for the lowest scores, below average, in each of the indicators taken into account, to identify opportunities to increase economic performance.

After the static analysis of the scores obtained during the period under analysis, the scores related to the dynamic evolution of the indicators are verified. If scores below 15 are found in the dynamic evolution of an indicator, this is the signal that there are certain risks. If

there are scores below 5 in the dynamic evolution, it means that there have been significant decreases in one or more of the indicators. And in this case it is considered that there may be some alarm signals, although if the absolute value of the indicators is good.

### **score on the range 40-60**

Medium situation, with minimal risks but which must be taken into account due to the fact that in the near future, if those conditions in which it manifests itself are perpetuated, the risks may increase.

### **score on the interval 20-40**

Unfavorable situation - economic and financial risks can turn into systemic risks, generating effects that are difficult to overcome through corrective decisions. In such situations, radical, structural measures are required, which are often expensive and have a lower chance of success.

### **score < 20**

Critical situation and the management is forced to adopt some decisions with action in the depth of the economic system it leads or those decisions that prepare the exit of the economic unit from the market.



The lowest scores, below the value of 5, to find out and locate the biggest problems;

- the scores related to the dynamic evolutions will be identified, if the problem is marked by continuity from one month to another or is only a sporadic aspect, a conjectural problem appeared in the current month; For example: if the dynamic evolution score is on interval 10-15, it results that the risks are persistent and permanent and if it is below the level of 10, it results in a worsening of the respective situation.
- other low scores will be sought, those below average, to suggest and locate the areas on which action needs to be taken to rectify the situation created and issue corrective and improvement decisions; In such a situation, the dynamic evolution will be followed in order to determine whether or not there is a certain attenuation on the trend line of the unfavorable values identified in the table with the current static analysis.
- next, the score obtained on labor productivity on its dynamics will be followed in order to determine the concrete conditions in which the risk factors act.

Details:

- ✓ those indicators that obtain high values reflect the economic or financial areas and register substantiated equilibrium states, which denotes a positive evolution of economic activity;
- ✓ indicators with low values represent those signal criteria that show the occurrence of risks of loss of balance and their value denotes the force with which they act on economic or financial activity;
- ✓ in both cases, for a better substantiation of the directions and the force of action of the risks, it is also necessary to analyze the

warnings from the previous periods to see if the corrective decisions taken previously generated the expected effects, respectively, led to the improvement or not the situation;

- ✓ it is important for the user to pay due attention to the deviations from the equilibrium line of each of the indicators that make up the barometer.

## 7 CONCLUSIONS

The equilibrium states for the whole economic activity or its components are under the action of risk factors. Losing balance means slippage, sometimes difficult to stop with economic and financial effects increasingly difficult to anticipate. In this sense, once the signal is received that a certain balance is compromised, the interventions can be operative with real possibilities to put the whole economic activity back on the correct line of evolution.

The ability to continue working in sustainability conditions is a major desideratum of management in SMEs, perhaps most importantly, above the need for profit.

The barometer allows the identification of systemic and local dysfunctions in economic and financial flows from the first moments of the action of risk factors. The barometer has as main purpose the determination of the economic and financial health of the economic units at a certain moment but also in **dynamics**.

## BIBLIOGRAPHY

- Nicolescu, O., Nicolescu, C. (2008). *Intreprinderile mici și mijlocii. Concepte, abordări, studii de caz*, Editura Economică, București, 2008.
- Niculae Mirela, (2018). *Stabilitatea agenților economici în condiții de criză economică*. Ed. Pro Universitaria, București.

Olson Mancur (1983). *Creșterea și declinul națiunilor: prosperitate, stagflație și rigidități sociale*. Ed. Humanitas, București

Richardson Vernon J. și James F. Waagelein (2002). The influence of Long Term Performance Plans on Earnings Management and Firm Performance. *Review of Quantitative Finance and Accounting*.

Stancu Stelian (2002). *Competiția pe piață și echilibrul economic*. Ed. Economică, București, 2002

Welsh, J., A. White, J., F. and Dowell, P. (1981) A small Business is not a Little Big Business. *Harvard Business Review* vol. 59, no. July/August, p18.

Institutul Național de Statistică  
<http://www.insse.ro/cms/files/publicatii/pliante%20ostatistice/IMM-2014.pdf>.