INTEGRATED METHODS FOR THE DIAGNOSIS OF THE ECONOMIC POTENTIAL OF COMPANY`S ECONOMICAL POTENTIAL

METODE INTEGRTE DE DIAGNOSTICARE A POTENTIALULUI ECONOMIC AL INTEPRINDERII

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Abstract. *The present article proposes a qualitative analysis of parameter models used in the world`s practice for diagnosis of a Company's Economical Potential. Several models, for the companies` diagnosis, were proposed and researched, in the context of an express analysis. In the same time, the authors` point of view regarding the informative usefulness of the discussed methods, taking into account the main functions of the activity in enterprises, is presented. In the end, a case study is presented, regarding the way of using the integrated methods for diagnosis of economical potential into economics practice.*

Key words: *diagnosis, performance, efficiency, aggregation index*

INTRODUCTION

The present paper contains an applied research on the factorial models widely employed in world practice for the diagnosis of the economic potential of a company. Several models for the diagnosis of companies in the context of a specific analysis have been researched and proposed. Moreover, a personal vision on the content of the outlined methods is being presented, taking into account the main compartments of the companies' activities. All the applied models are recommended for the diagnosis of the economic potential of ''SÜDZUCKER" AG and of affiliated companies.

RESULTS AND DISCUTION

The representatives of the Anglo-Saxon analytical school use the economic potential diagnostic in order to predict the future activity of the company and to establish its risk of going bankrupt.

The simplest model for diagnosing the potential of a company is the bifactorial model, and its use has been examined in the works of I.A. Fomin. When constructing a given model two indices are taken into account, which characterize the possibility of a future activity of a company: current liquidity ratio and the. ratio between the borrowed means and the available liquidity.

As a result of the practical analysis carried out in the West, the coefficients for each of the two factors were determined:

For the American companies this model is as follows:

$$\mathbf{Z = -0.3877\text{-}1.0738 \times K.l.c + 0.0579\ Kimp.v.}$$

Another factorial model, widely employed in Western practice, is Altman's model or "Z score".Z score is the barometer who measures the health of an enterprise and it is calculated with several key indices. The model consists of five financial indices for the calculation of Z.

The empirical results of this model cannot be directly applied to present financial expectations, especially for companies with a large scale automated production process.

The latest research on the practical importance of Altman's Model demonstrates that this model can be used in the diagnosis of production units activity not only in the U.S. economy.

In order to apply Altman's Model in the assessment of the performance of companies, the results of this model need to be revisited and amended according to the economic situation and national accounting standards. For example, V. Balanuță presents in his works the version of Altman's model which is applicable to the diagnostic of the performance status of companies:

$$\mathbf{Z = 3.3\ K1 + 1.0\ K2 + 0.6\ K3 + 1.4\ K\ 4 + 1.2\ K5,}$$

In this model not only the weighting coefficients for each rate are different, but also the way to determine the rates differs from the American version of the model.

In the American economy, Du Pont equation is extensively used to diagnose the economic potential of a company.

Du Pont equation allows the evaluation of the main indices from the investor's point of view – return on equity - based on three indices of financial efficiency: return on sales, asset turnover ratio and financial leverage.

Du Pont equation reflects the three categories of decisions that have to be taken by the financial manager: investment (asset utilization efficiency), financing (leverage) and operational decisions (net profit margin). Between financial profitability (ROE) and economic profitability (ROA) there is a relation based on the leverage effect (financial leverage):

$$ROE = ROA + (ROA-r) \times \frac{Dlt}{Co}(1-i),$$

One of the indices that determine the financial situation of a company is the financial leverage coefficient: the relation between own capital and assets borrowed in the long term.

Therefore, Du Pont equation is one of the main methods of structural analysis for company finances and determines the balance of different financial results, affected by it.

However, not even this model represents a deep and sufficient analysis of the information for the diagnosis of financial and economic potential. This model can be used along with other diagnostic methods.

Another model for the diagnosis of the economic potential of a company is presented by Russian authors Truşina G. S. and Pristaş I. V., who consider the complete competitiveness index to be the main criterion for evaluating the full economic potential, as it is oriented towards investors, consumers and company managers.

The complete competitiveness index of the economic potential of a company is based on the basic parameters of the potential for production, competitiveness of merchandise and financial situation of a company.

This index can be determined by using the following formula:

$$Jc.p.e = Jt.e.xJc.m.xJfin$$

THE APPLICATION OF THE FACTORIAL MODELS IN THE SYSTEM OF DIAGNOSIS OF THE STATE OF PERFORMANCE

In order to ensure the effectiveness of their activities, one of the main problems occurring in the production units is finding ways to reduce consumption and costs and to increase competitiveness, which greatly depends on the particularities of the economic potential and the capacity to exploit it in each concrete case. The following analysis model targets the content of five consecutive interdependent compartments: production and marketing program, efficiency in the use of factors of production, consumption and costs, financial results and profitability, financial situation and stability.

The agro-industrial company ''SUDZUCKER'' AG, which includes three sugar producing factories in Bavaria, was chosen as subject of analysis. The diagnosis of the state of performance of companies in the production field begins, in most cases, with studying the production and marketing program. General indices, that reflect the activity in this field, have been grouped in the first compartment.

In terms of economic content, the following indices of value are considered for examination: the volume of manufactured production (VPF), the volume of sold production (VPV) and sales revenue (VV). It is known that these indices have a reciprocal connection that can be determined from the following relations:

$$VPF = VPG - PCE;$$
$$VPV = VPF \pm Sp;$$
$$VV = VPV \pm VAV.$$

In the first stage we have examined the accuracy of the information necessary in order to determine the indices analyzed, which is shown in the table below: Südzucker AG.

The information presented in the table shows that, for Südzucker AG on the whole, there is a positive trend of increasing in both absolute and relative sizes, in the reporting year compared to the previous one. For the affiliated companies, the dynamics of the nominated indices is different, namely: at the sugar factories in Nuremberg and Regensburg all the indices analyzed in the reporting year compared to the previous year are increasing.

Table 1. Initial data for the analysis of production and marketing program on the whole for Südzucker AG and affiliated companies

Company	**Volume of manufactured production** (thousands Ron)			**Volume of sold production** (thousands Ron)			**Sales revenue** (thousands Ron)		
	2008	**2009**	**Indices %**	**2008**	**2009**	**Indices %**	**2008**	**2009**	**Indices %**
A	1	2	3	4	5	6	7	8	9
1.Sugar factory in Nürnberg	215034.7	295916.7	137.61	214475.5	274807.4	128.13	219121.9	302028.1	137.84
2.Sugar factory in Regensburg	194238.9	203118.2	104.57	148085.6	174474.4	117.82	127361.1	163451.0	128.34
3.Sugar factory in Plattling	263114.1	290535.1	110.42	240444.8	243931.3	101.45	190029.1	175587.7	92.40
Südzucker AG total	**672387.7**	**789570.0**	**117.43**	**603005.9**	**693213.1**	**114.96**	**536512.1**	**641066.8**	**119.49**

Although on the whole Südzucker AG has recorded a positive trend in the dynamics of all the selected indices, the index of the volume of sold production is less than the index of the volume of manufactured production.: IVPV < IVPF (114.96 < 117.43), which suggests that the balances of stock deposits of the finished production at the end of the reporting year have increased, and this fact is assessed in a negative manner.

At the same time, the index of the sales revenue is greater than the index of the volume of sold production, IVV > IVPV (119.46 >114.96) – and this is assessed positively, as it shows that in the reporting year the revenues obtained from the sale of other operational activities have increased compared to the previous year.

Therefore, based on the results of the analysis performed, it can be concluded that, in general, Südzucker AG deploys an effective activity, succeeding in securing additional income, other than the one obtained from manufactured production, thus protecting its cash flows and financial stability.

Analyzing the problems facing the production units in the process of alignment with the new activity conditions, namely the lack of advanced technologies and energy resources in amounts that would be sufficient for the suitable development of the industrial complex, special attention should be paid to the efficient use of production factors.

All these resulting indices are determined as a ratio volume of core (operational) activities and the size of the respective factor of production. At first sight, it appears that each generalizing index, reflecting the efficiency in the use of production factors, allows in a justified manner an estimation of the results obtained in this field.

However, in the formulas for calculating them, each time the counter is the same generalizing index – ''the volume of manufactured production'', and there is a need for the use of an aggregation index, which would make possible to determine how to use all the factors of production, i.e. extensively or intensively. But in order to obtain more convenient results, the intensive way should prevail in this field.

The proposed aggregation index to characterize the extent to which the production factors are used in the determination and estimation of their efficiency is represented by the following relation:

$$G_{UFP} = \frac{I_{\overline{WS}}}{I_{\overline{NS}}} \times \frac{I_{RMF}}{I_{\overline{MF}}} \times \frac{I_{RM}}{I_{CM}},$$

This aggregation index allows us to determine the degree of development of operational activities of the company through extensive and/or intensive paths.

If the size of this index represents a subunit ratio (GUFP <1), then the company uses the extensive development path, by increasing the quantity of production factors, which leads to an increase in production consumption and to a reduction in the efficiency of their use. Usually, attracting additional production factors is not always accompanied by an increase in the volume of business.

In the case of Südzucker AG on the whole, the size of the aggregation index examined in the reporting period has reached 0.9831 points. Therefore, if we examine the extent of use of production factors, according to the estimation of their efficiency through the development of operational activity of the company, then we can notice that in Südzucker AG the prevalent path of development is the extensive one.

Table 2. The size of the aggregation index regarding the degree of use of production factors at Südzucker AG for the affiliated enterprises

Index	The Nürnberg sugar factory	The Regensburg sugar factory	The Plattling sugar factory
A	1	2	3
GUFP	0.7340	0.9353	1.4423
Manner of development	extensive	extensive	intensive

In order to determine, more objectively, the situation of the insurance and use of the production factors, it is essential that the efficiency of the use of the human resources be determined not based on the average productivity of an employee (Ws), but based on the output of the productive staff (Rpp), calculated as the ratio between the volume of manufactured production and the remuneration fund of the productive staff.

We believe that this rectification makes it possible to observe the same mechanism for output calculation, based on value indices, for all production factors. Simultaneously, the core of the comparison of the results shall be much more objective.

Thus, in the new approach, the calculation formula for the aggregation index is proposed to be presented:

$$G_{UFP}=\frac{I_{Rpp}}{I_{FRp}}\times\frac{I_{RMF}}{I_{\overline{MF}}}\times\frac{I_{RM}}{I_{CM}},$$

Following the use of the information gathered within the size of this index, the aggregation index examined during the accounting period reached the level of 0.6573 points.

The next step in diagnosing the state of performance of the enterprises includes the analysis of the consumption and expenses of the enterprise.

Table 3. The size of the aggregation index regarding the degree of use of production factors at the affiliated enterprises

Index	The Nürnberg sugar factory	The Regensburg sugar factory	The Plattling sugar factory
A	1	2	3
GUFP	0.4892	0.6740	1.0393
Manner of development	Extensive	extensive	intensive

The first step in this field includes the estimate of the consumption to 1 Ron manufactured production. The reason for selecting this index results from the fact that the consumption at 1 Ron manufactured production fulfils the function of index generalizing efficiency which reflects the effort made by the analyzed enterprise in obtaining the manufactured production. This index is determined by means of the following relation:

$$VPF = \frac{CPT}{VPF} \times 100 ;$$

In analytical practice, the smaller the size of this index is, the more efficient is considered to be the use of the consumptions that form the production cost. Therefore, the reduction in dynamics of this index is positively assessed.

The modification of the consumptions to 1 Ron manufactured production is determined by the following three factors:

- the modification of the structure and range of the manufactured production;
- the modification of the level of consumption per product unit;
- the modification of the price for the raw materials, consumed materials and finished production.

The recoverability of assets reflects the turnover ratio of all the assets held by the enterprise at a given moment and characterizes the sales revenues resulting from 1 Ron total assets.

The recoverability of assets is considered the generalizing turnover ratio of assets and is also called the rotation number of total assets. The size of the recoverability of assets varies from one branch to another, but in

order to ensure an efficient production activity, the size of this rate must be greater than one.

The return on assets reflects the efficiency of the use of the assets employed in the enterprise's activity, regardless of their sources of origin. The efficient use of assets in the enterprise's activity directly influences the enterprise's ability to survive financially.

The formula for calculating the return on assets is as follows:

$$Ra = \quad Ppi / TA \quad \times 100,$$

Section V provides the diagnosis of the situation and financial stability of the enterprise according to a system of specific indices.

The situation and financial stability of manufacturing enterprises can be characterized by using the following ratios: Aggregation liquidity ratio (RLag); Use of working capital ratio (Rucl); Financial autonomy ratio (Raf).

In terms of economic content, the liquidity problem is a complex one, being treated differently in the specialized literature. There have been suggested various methods of calculation and assessment of the balance sheet liquidity indices, but, in analytical practice, the most commonly used are the following three ratios: Absolute liquidity ratio (RLa); Intermediate liquidity ratio (RLi); Total liquidity ratio (RLt).

The evolution of the balance sheet liquidity indices can be rendered more accurately by the use of a single aggregation index – the Ratio of the aggregation liquidity of the balance sheet (RLag).

We believe that at the level of national economy, this index can be successfully used in the comparative assessment of the liquidity of the balance sheet in order to determine the rating of the analysed enterprise.

The size of this index, in our opinion, may be determined by using the following relation:

$$RLag = \frac{\left(RLa \times 1/ka\right) + \left(RLi \times 1/ki\right) + \left(RLt \times 1/kt\right)}{ka + ki + kt},$$

Note that the more the size of this aggregation index is closer to 1, so higher is the degree of liquidity of the analyzed enterprise.

The next stage is the analysis of the enterprise's solvency, or its ability to finance long-term economic activities, which is characterized by the following two ratios.

The use of working capital ratio (Rucl) reflects the degree of use of the working capital of the analyzed enterprise and is determined based on the following relation:

$$Rucl = \frac{VV}{CL}$$

VV – sales revenue, in thousands Ron; CL – working capital, which is determined on the basis of the following relation: CL = (TAC - DB) - (TDS -CS),

TAC - total current assets; DB - available cash, TDS - total sum of short-term debts; CS - short-term bank loans.

Generally, the higher the ratio of the use of working capital, the higher the level to which the obtained results are assessed.In analyzing the solvency of an enterprise, the world practice most often uses the Financial autonomy ratio (Raf).

Irrespective of the name assigned in different sources, this index is determined according to the following relation:

$$Raf = \frac{CP}{Cper}$$

We suggest that an effective combination of these factors, for all the sections of the analysis, could ensure the development of a profitable activity in competitive economic relations.

On the basis of the indices presented above, we have developed and now propose the use of a new generalizing index that characterizes the economic potential of the enterprise as a whole – the Aggregation index of the enterprise's economic potential.

This index allows the examination of the diagnosis of the economic potential of the enterprise within the context of ensuring a sustainable activity.

The given model comprises three aspects, which constitute, individually, the basic sections of the enterprise's economic potential:

The production and marketing program, characterized by the Aggregation index of the production and marketing program (Jppc);

The efficiency of the use of production factors, characterized by the Aggregation index of the efficiency of the use of production factors (Jfp);
The enterprise's financial potential, characterized by the Aggregation index of the financial potential (Jpf).
Since each component of the enterprise's economic potential has the same degree of importance within the diagnosis itself, as demonstrated in the previous chapters, we have agreed that the correlation between the aggregation index of the economic potential (Jpe) and the nominated aggregation indexes be rendered by the formula of arithmetic mean:

$$Jpe = \frac{Jppc + Jfp + Jfin}{3}$$

In this context, we consider that the Aggregation index of the production and marketing program is a strategy factor; the Aggregation index of the efficiency of the use of production factors – a potential factor and the Aggregation index of the financial potential – an economic adjustment factor.

CONCLUSIONS

Although in the analytical practice there are used an essential number of result indices and factorial models, which characterize the company's development potential, we have opted in this paper for the selection and identification of some factorial models based on utilizing a system of aggregation indices (indexes) that ensure the examination of all activity domains within the company.

The application of some adjustments to the models examined here would enable the assurance and the capitalization of international experience in the field of diagnosis and estimation of a company's economic potential. Simultaneously, we have borne in mind the need to unify the examined indices because, in our view, they have so far been taken from various sources, thus posing difficulties to the manner of calculation and estimation of the company's obtained results.

The research carried out in the field allows for the drawing up and the utilization of factorial models based on the triple connections among the aggregation indexes that characterize the production and sales program, the

efficiency of utilizing production factors and the companies' financial potential.

Without minimizing the importance and usefulness of the classic analytical methods in the field of diagnosis and estimation of economic potential, we may opt for perfecting these methods by starting from the possibilities of using modern information technologies in the economic and financial analysis of a company's activity.

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