# The creation process for methods of financial situation of enterprises

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**ABSTRACT**

Monitoring of a financial situation of enterprises is highly significant, what was proved by the latest world financial crisis. Such a monitoring will allow early identification of a threat, and thus undertaking preventive actions, which will protect from loses that may lead to a bankruptcy. Therefore, it is so significant to employed the verified analytical tools. The aim of the article is to present the methods of monitoring the financial situation of the company and directions for further research in this area. As part of the presents the essence of indicator analysis, with the release of its application to the quintessential area, namely financial liquidity. In the later part of the study are shown the directions of the development of new methods for monitoring the financial situation of the business entities that require further research.

*Keywords***:** Financial monitoring, methods, evaluation of the financial situation, enterprises

## 1.  INTRODUCTION

The financial monitoring enables creation of new information, financial and decision resources. Features of the financial monitoring include concentration on key areas of financial functioning of an enterprise, as well as on other field of operation. Purpose of the monitoring is to specify the most significant phenomena and factors that exert direct influence on the enterprise's results. The system of financial monitoring poses an element of early warning against a threat, it enables assessment and early response to those threats and risks.

The financial monitoring is based on ratios, which pose a relationship between the size of the resources, flows, or a resource-flow mix, where the property, income, costs and the results of the economic entity can be listed. An empirical value of the ratio is manifested through the possibility of comparing them, classify the researched processed, phenomena and objectives adopted by an enterprise, according to which the phenomena will be examined. The empirical value of the ratios is also manifested in creation of a while structure of connections between financial and economic phenomena, and development of such ratios that can examine a given situation - a financial and economic process - with different levels of details.

The main and the most important feature of the ratios within a financial monitoring system is the possibility to systematize the level of standards, necessary to estimate and determine deviations. These standards provide information on potential financial problems.

Standards of financial ratios can be determined on the basis of the following criteria [Skowronek-Mielczarek A., Leszczyński 2008, p. 242] [9]:

- determination of the levels of indexes in prior reporting periods,
- comparison of data with planned values,
- comparison of ratios with data from other units,
- comparison of data with criteria determined externally and internally.

The process of examining and verifying financial phenomena adopts various types of dynamics indexes for estimation of phenomena in a specific time. Within the monitoring system, a significant place in terms of assessment of financial phenomena that take place in the enterprise, is occupied by processes in absolute terms, such as costs, income or a financial result. The financial phenomena and processes are evaluated on the basis of profitability, debt and liquidity. In case of the financial monitoring, key ratios are selected and verified empirically [10]. The correlated values pose a basis for evaluation of the enterprise's financial condition, its results, and at the same time point to negative phenomena that take place within an economic entity, allowing to undertake proper decisions on repair transformations [11].

Purpose of the article is to demonstrate methods for monitoring of the financial situation of an enterprise, and direction of further research in that scope. In order to achieve the assumed objective, the essence of index analysis was presented, together with its application to the most significant area, namely financial liquidity. Further part of the paper demonstrates directions for new methods of monitoring the financial situation of economic entities, which require further research [5].

## 2. THE ESSENCE OF INDEX ANALYSIS AND ITS APPLICATION TO ASSESSMENT OF FINANCIAL LIQUIDITY

Initial familiarization with financial reports provides general information on the material and financial condition of a given enterprise. An index analysis is often an expansion of an initial analysis. An index is a relationship between values related in terms of purpose, determined in order to achieve the assumed cognitive values [1]. One method for evaluation of a material and financial situation of a company is the so-called index analysis. It is based on various mathematic structures. It allows both to compare situations of various companies from the same or different sectors, and to trace changes in a situation of a given company within the course of time [2].

The index analysis of an economic entity's situation is based on the set of indexes picturing the results of its operation in the field of profitability, liquidity, debt and the operational capability. It allows to get a quick insight into the company's activities and its economic operation throughout the previous periods. The index analysis poses a quick and effective method of reviewing the economic operations and activities undertaken by the company, it is based only on the enterprise's past. However, together with the surroundings analysis, it may serve to predict the company's operating conditions in the future [3]. The discussed analysis enables application of numerous ratios with various economic contents and various information-analytical significance [Bednarski 2007, p. 76] [7].

It is most import to focus one's attention on usefulness of the ratios selected for description of the enterprise's financial situation, and proper interpretation of the calculated values, not on the calculation process itself.

The index analysis is a generalization of the financial analysis, but it also allows a general outlook on the company's operations, through the range of development of various financial relationships. Thanks to financial relationships we can:

- get familiar with and assess the economic facts and phenomena,
- set out solutions intended for facilitation of the company's operations,
- estimate the effects resulting in the proposed decisions.

**Tab. 1.** Subject of the index analysis

| Economic situation | Capital situation | Financial liquidity | Profitability |
|---|---|---|---|
| Property structure | Structure of the involved capitals | Assessment of the company's capacity to pay | Assessment of the development of costs |
| Dynamics of changes in the size of the involved property | Sources | Degree of the property's flexibility | Assessment of the structure of income |
| Rotation of resources | Size and the pace of their change | Payment policy towards the parties | The income degree and force |
| Investment and redemption policy | Costs related to selection of specific capitals | | The level of financial accumulation |

Source: own work.

While assessing the financial condition of the enterprise, the employed financial ratios are grouped in such a manner as to present the similar economic contents. We distinguish such groups as:

- profitability ratios,
- efficiency ratios,
- debt indexes,
- financial liquidity ratios.

The main problem in the index analysis is selection of a basis for comparisons for the achieved results [Siudek 2004, p. 182] [6]. The economic phenomena, instead of a descriptive form, should be presented numerically, what means that they must be valued adequately, on the basis of the assumed comparative base. While comparing the researched phenomenon to the value agreed on previously, we are capable of determining a deviation, which will allow to find out whether a given economic phenomenon is positive or negative.

One of the most significant areas for assessment of the enterprise's financial coordination is evaluation of financial liquidity. Literature includes numerous notions that explain the term financial liquidity. It is most often referred to as the "enterprise solvency". According to Bannock, liquidity means a situation, where a company is capable of settling its current liabilities, which arise from ordinary transactions or unexpected events, or just occurring situations, thanks to which "the good were purchased for a good price" [4]. Financial liquidity means the company's ability to settle its liabilities in due time. Maintenance of liability is a necessary condition for the company's operation. In the material and capital aspect, liquidity means as a common relationships of liabilities that finance the property, as well as of the property, which secures timely payment for the liabilities. Evaluation of financial liquidity makes use of liquidity ratios, which are determined as degrees of liquidity.

They are created through comparison of specific positions of assets and short-term liabilities. A result of this comparison should determine the enterprise's financial capacity to pay, i.e. to inform on whether and to what extent the short-term liabilities are compliant in term of the level and chargeability, with the status of the means of payment and other short-term sources of financing. Financial liquidity management means to maintain assets that are easily exchangeable to cash, and reserves of financial sources, on an optimum level for the enterprise. In a situation of loosing financial liquidity, the company becomes insolvent for a long term, what leads to a bankruptcy. In term, excessive liquidity limits the developmental possibilities, because it reduces the profit, which allows the company to finance its development.

The company, which operates within a market economy, is obliged to monitor its financial liquidity continuously, i.e. to maintain the ability to settle its liabilities in a timely manner. It was observed in developed countries that one of the most frequent reasons for bankruptcy of small and medium-sized enterprises is the loss of financial liquidity. A conclusion should be drawn here that moderate profitability of companies is not enough. There is also a need for settling current payments and liabilities. While taking into account the strategies for a company's survival, the financial liquidity is more important than profitability.

There is a great dependence between the enterprise's bankruptcy and its financial liquidity. This dependence is confirmed by general characteristics of subsequent phases of a company's bankruptcy, namely:

- phase 1 - a necessity to reduce outlays, first of all in investment areas, strict revenue collection, i.e. so-called care over the cash,

- phase 2 - payment difficulties, the willingness to acquire cash, no regulation of liabilities and sales of a part of fixed assets,
- phase 3 - dismissal of workers, sales of a part of the property, and as a consequence a possible condition of insolvency, i.e. bankruptcy.

The significance of financial liquidity is increased in the balance sum because of a great share of the circulating capital and short-term liabilities. The relation of the circulating property to the short-term liabilities demonstrates the amount of property excess, which is devoted to security over payment of due liabilities, thus is presents the enterprise's safety margin, because the higher the excess, the greater the financial danger of the enterprise.

The liquidity is examined through a comparison of liquid assets (a quick possibility to transform them into cash) with the liabilities payable in the nearest time. During evaluation of the company's operation, the level of the calculated indexes must be compared with the standard, which was agreed on previously. Additionally, tendencies for their changes in time are verified. Low indexes pose a warning that an enterprise can loose its liquidity, and thus the ability to pay for short-term liabilities. A situation, where the ratios are too high is also negative, i.e. there is excessive liquidity, which means excessive accumulation of cash, what may case a drop in profitability. The following indexes are employed for examination of financial liquidity:

- current financial liquidity
- quick ratio or increased ratio
- super-quick ratio, the so-called cash to debt ratio

the formulas for financial liquidity ratios are presented in Table No. 2.

**Table 2.** Formulas for financial liquidity ratios

| | | |
|---|---|---|
| **Current ratio** | $$CR = \frac{A_o}{ZK}$$ where: $A_o$ – current assets ZK – short-term liabilities (current liabilities) | The optimum value of the ratio remains in the scope from 1.2 to 2.0. It informs about how many time the current assets cover the current liabilities. |
| **Quick ratio** | $$QR = \frac{A_o - I - KRM}{ZK}$$ where: I – stock KRM – short term deferred charges | The optimum value of the ratio remains in the scope from 1.0 to 1.2. |
| **Debt to cash ratio** | $$QR_1 = \frac{SP + KPW}{ZK}$$ where: SP – cash KPW – short-term securities | The optimum value of the ratio remains in the scope from 0.1 to 0.2. |

Source: own work on the basis of: Siudek T., *Analiza finansowa podmiotów gospodarczych*, Wydawnictwo SGGW, Warsaw 2004, pp. 187-188.

If the current ratio is too low or too high, the reason for such a state of affairs must be examined. A low ratio means that there are some difficulties in payments, or they may emerge in the future. A reason is certainly an insufficient number of current assets, which are incapable of covering the current liabilities. In turn, a high ration suggests that the excess of working capital held by the enterprises, which may be present in various forms, i.e. In a form of not invested cash, excessive supplies or not easily enforceable receivables.

Thanks to a comparison of current and quick ratios, we will have a better picture of stock in the enterprise. The stock is significant in an enterprise, when there is a difference of capitals between the ratios, what proves significant freezing of capitals. It is advantageous in conditions of significant inflation, because it may protect from a significant increase in prices. The ratio of cash solvency informs about a part of liabilities that the company is capable of paying immediately [12].

Application of financial ratios allows to identify the strong and weak sides of an organization's operation. They show whether a company is capable of fulfilling the existing financial liabilities, and whether it has no troubles with collection of revenue, whether it manages its resources proper, whether the company's property is managed properly, whether the capital structure is proper, whether the financial efficiency of the company is sufficiently high [9].

## 3. DIRECTIONS OF RESEARCH OVER THE METHODS FOR FINANCIAL SITUATION MONITORING

In case of financial monitoring, assessment of economic and financial situation can be obtained from synthetic ratios, which are a resultant value of particular ratios with particular weighs.

A quick-test model belongs to synthetic ratios. The quick-test model structure is based on 6 indexes, which are ascribed with specific weighs. These ratios are as follows:

**1.** Covering the liabilities with a financial excess - weigh 1.5

$$\frac{ZB + A}{ZO}$$

where:
ZB - gross profit,
A - depreciation,
ZO - liabilities in general.

**2.** Financial structure - weigh 0.08

$$\frac{AO}{ZO}$$

where:
AO - assets in general,
ZO - liabilities in general.

**3.** Profitability of assets - weigh 10.0

$$\frac{WB}{AO}$$

where:
WB - gross result
AO - assets in general.

**4.** Profitability of sales - weigh 5.0

$$\frac{WB}{P}$$

where:
WB - gross result
P - income

**5.** Ratio of stock involvement - weigh 0.3

$$\frac{Z}{P}$$

where:
Z - stock,
P - income.

**6.** Rotation of assets - weigh 0.1

$$\frac{P}{AO}$$

where:
P - income,
A - assets in general.

On the basis of ratios and weighs, the synthetic ratio W is calculated, posing a sum of products from particular ratios and weighs, enabling quick assessment of the financial condition of an economic entity, together with an introspection of changes of this situation in subsequent reporting periods. The boundary value is adopted, and regarding the size of the synthetic ratio, the following division can be differentiated:

- W<0 – a company with a bad financial and economic condition, threatened with bankruptcy,
- 0<W<1 – a company with a poor condition, not threatened with bankruptcy,
- 1<W<2 – a company with a good financial condition,
- W>2 – a company with a very good financial conditions.

The ratios in financial monitoring are employed in evaluation of financial threats. There are numerous directions for development of the financial threats assessment methods, among which the following ones can be differentiated:

- discrimination analysis,
- cluster analysis methods,
- probit and logit models,

- classification and regression trees,
- artificial networks of neurones,
- methods for support sectors.

A single-dimension discrimination analysis is based on such a selection of ratios that will enable grasping of enterprises that are dangered and that are not dangered with bankruptcy. It is assumed in a single-dimension discrimination analysis that each ratio is analyzed separately. The selected ratios are ascribed with particular values that separate the units endangered with bankruptcy from those that are not in such a danger. One of the techniques is the Beaver model [5]. The Beaver model lists 6 indicators, related to the risk assessment in short and long period, namely the relationship between:

- financial excess and liabilities in general,
- net financial result and assets in general,
- liabilities in general and assets in general,
- circulating capital and the assets in general,
- current assets and short-term liabilities,
- difference in the current assets and supplies, and the difference of the operational
  Costs and depreciation [13].

Each ratio mentioned above has ascribed characteristic features related to changes in their value in time, in relation to enterprises with a deteriorating financial situation. Evaluation of the financial threat level takes place through observation of changes of values in time, related to each ratio of the analyzed enterprises, referring to average values of those ratio in a given sector, which the enterprise belongs to. Probability of bankruptcy of an enterprise is greater, when the number of deviated ratios is high (a symptom of high risk).

The multi-dimensional risk analysis is based on the model constructed on a specific number of financial ratios and values. The model is based on information on two groups of enterprises, where the first one includes the companies that announced bankruptcy, and the companies that have a good financial situation. One method for a multidimensional discrimination analysis is the Altman model, which is presented in the following formula:

$$Z = 0{,}717X_1 + 0{,}847X_2 + 3{,}3X_3 + 0{,}42X_4 + 1{,}0X_5$$

where:
$X_1$- working capital / assets in general,
$X_2$- accumulated profit / assets in general,
$X_3$- profit before interests and taxation / assets in general,
$X_4$- accounting value of the shares / assets in general,
$X_5$- net sales / assets in general.

Values ranges for the Z ration were determined on the basis of the financial model and data:
- $Z<1{,}23$ – insolvent enterprises,
- $1{,}23<Z< 2{,}9$ – a gray zone,
- $Z>2{,}9$ – solvent enterprises.

This model is characterized with significant qualities for estimation of the enterprises solvency level, what is confirmed by its numerous modification introduced by world scientists. However, such models are limited in such a way that they serve particular economies and specific conditions [14]. For example, the Altmant model can be applied only in case of developed economies. Another example of multi-dimensional discrimination analysis are models based on the sample of 205 listed on the Warsaw stock exchange market, the formula for which is presented below:

$$D(W) = - n2,50761W_1 + 0,00141W_2 - 0,009252W_3 + 0,0233W_4 + 2,608$$

where:
$W_1$- general debt ratio,
$W_2$- equity / assets,
$W_3$- cycle of replenishment,
$W_4$- stock profitability ratio.

Verification of a financial situation consists in substituting the ratios mentioned above with changeable functions. Such models pose a tool that allows to trace changes in values of a synthetic ratio in a specific time interval.


## 4. CONCLUSIONS

Methods for monitoring of a financial condition of enterprises require further research and development, in order to improve them and lead to greater universality, i.e. the possibility to apply for a greater group of economic entities. Monitoring of a financial situation of enterprises is highly significant, what was proved by the latests world financial crisis. Such a monitoring will allow early identification of a threat, and thus undertaking preventive actions, which will protect from looses that may lead to a bankruptcy [15]. Therefore, it is so significant to employed the verified analytical tools, which as can be seen in this work, are being shaped and developed. Currently, the analytical tools that are employed most often in the economic practice include the index analysis and the so-called synthetic measurements arising on its basis, focused on examination of a given area of company's operations. There are also numerous discrimination models, which however requires an increase in the universality level regarding the limitation of their application in particular branches. Other directions of research over the monitoring methods for the financial condition require detailed works, what is a highly interesting starting point for further research [16].


## References

[1]   Gołębiowski G., Tłaczała A. (2005), *Analiza ekonomiczno-finansowa w ujęciu praktycznym,* wyd. Difin, Warszawa.

[2]   Hadasiak D. (1998), *Upadłość przedsiębiorstw w Polsce i metody ich prognozowania*, [w:] Zeszyty Naukowe AE w Poznaniu, nr 153, Poznań

[3]   Machała R. (2001), *Praktyczne zarządzanie finansami firmy*, Wydawnictwo Naukowe PWN, Warszawa.

[4]   Bannock G., Manser W. (1992), *Międzynarodowy słownik finansów*, wydawnictwo A. Bonarski, Warszawa.

[5]   Wojtaszek H., *Selected aspects of innovative motivation*, World Scientific News, 44 (2016) 1-12.

[6]   Zaleska M. (2002), *Identyfikacja ryzyka upadłości przedsiębiorstwa i banku*, Difin, Warszawa.

[7]   Siudek T. (2004), *Analiza finansowa podmiotów gospodarczych*, Wydawnictwo SGGW, Warszawa.

[8]   Bednarski L. (2007), *Analiza finansowa w przedsiębiorstwie,* PWE, Warszawa.

[9]   Skowronek-Mielczarek A., Leszczyński Z. (2008), *Analiza działalności i rozwoju przedsiębiorstwa*, PWE, Warszawa.

[10]  Mączyńska E., Kuciński K. (2005), *Zarządzanie upadłością*, IFGN, SGH, Warszawa.

[11]  Sierpińska M., Jachna T. (2002), *Ocena przedsiębiorstwa według standardów światowych,* Wydawnictwo Naukowe PWN, Warszawa.

[12]  Bellinger, David T., and Isabelle R. Moss (1999), High volume financial image media creation and display system and method." U.S. Patent No. 5,870,725. 9 Feb.

[13]  Scheer, August-Wilhelm (2012), *Business process engineering: reference models for industrial enterprises*. Springer Science & Business Media.

[14]  Rugman Alan M. and Alain Verbeke (2001), *Subsidiary‐specific advantages in multinational enterprises*, Strategic Management Journal 22(3).

[15]  Zhao, Jingyuan, Patricia Ordóñez de Pablos, and Zhongying Qi. (2012), *Enterprise knowledge management model based on China's practice and case study*, Computers in Human Behavior 28(2).

[16]  Mizik, Natalie, and Robert Jacobson (2003), *Trading off between value creation and value appropriation*: *The financial implications of shifts in strategic emphasis.* Journal of Marketing 67(1).