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PECULIARITIES OF THE SYSTEM FOR ASSESSING THE FINANCIAL SECURITY OF UKRAINIAN ENTERPRISES

ABSTRACT

The aim of the study is to improve the system for assessing the level of financial security of an enterprise. The subject of the study is the systemic processes of building and assessing the level of financial security of an enterprise. The study used the methods of theoretical and logical generalization. In the article, it is described the key points which characterize the methods of assessing the financial security of the enterprise. The results of the study consist in the formation of a system of indicators for assessing and managing financial security for a production and trade enterprise. The authors selected a set of indicators used for evaluation, involving an indicator method and visual image in graphic representation. There were analyzed results of the enterprise activity for three years in order to assess financial and property condition and financial security; diagnostic parameters were classified into five groups: assessment of property status, solvency, profitability, business activity (turnover) and financial stability. There are specified the content and problems of determining the indicators of financial security and enterprise operating efficiency on the example of a production and trade enterprise.

Keywords: enterprise financial security, operating efficiency, level of economic security, indicators, ratios, financial and property status of the enterprise

JEL Classification: C13, G32, O16

INTRODUCTION

Over the past decade, one of the reasons for the financial crisis and bankruptcy of industrial and commercial enterprises was the lack of a single, unified system for analyzing economic security and its basic financial component. Currently, we can observe a rather difficult situation in the functioning of domestic enterprises, which is deteriorating with the growth of risks and threats to their economic and financial activities due to the invasion of the Russian occupiers. The growing number of threats to Ukraine and its economy necessitates the creation of a unified system for analyzing the level of financial security that would take into account the specifics of accounting in Ukraine and the EU.

Enterprise performance requires constant control over its financial and property condition. To take feasible decisions and measures, one needs to have reliable information about the state of the company and its position in the market. That is why monitoring and analysis of financial and property status is the top priority.

LITERATURE REVIEW

Aspects of the formation and analysis of financial security are present in the works of foreign and domestic scholars. The economists V. Delas, E. Nosova and O. Yafinovich (2015) describe the mechanism for implementing the financial security of an enterprise; classify the factors of the internal and external environment that affect the financial security of an enterprise; and propose a classification of threats to the financial security of an enterprise. The advantage of this study is a systematic approach to determining the list of indicators of financial security. However, the absence of an algorithm for

calculating a summarizing indicator of the financial security of an enterprise reduces the value of the authors' scientific work.

The scientists N. Rushchyshyn, U. Nikonenko, and Z. Kostak (2017) define the functional goals and build a diagram of the process of ensuring the financial security of an enterprise. The advantage of this work is a systematic approach to the formation of an algorithm for drawing up a strategy for the innovative financial security of an enterprise. However, the disadvantage of this work is the lack of testing at an enterprise in the real sector of the economy.

Z. Titenko (2022), the author investigated the main theoretical provisions of the essence, definition and formation of the mechanism for managing the financial security of an enterprise. The advantage of this article is the formation of a single basis and structuring of financial security levels. However, the lack of a method for calculating the level of financial security of an enterprise reduces the value of this work.

Thus, the authors C. Gree and G. Leeves (2013) study the concept of financial security exclusively at the level of an individual - an employee. The advantage of this work is a detailed study of the relationship between unemployment and financial security. However, it does not take into account the numerous factors that affect financial security. The authors of another article (Gustman et al., 2010) investigated the impact of stock market financial security on the retirement age of employees. The advantage of these two articles is the combination of the spheres of influence of financial security of various objects and the labour market. Researchers L. Bovsh, A. Okhrimenko, M. Boiko and S. Gupta (2021) devoted their work to studying the impact of the tax system on the level of financial stability and financial security of hotel enterprises, where they identified a set of factors of influence with an assessment of their importance. The economist J. Williams (2014) investigated the impact on the financial security of corporations of such factors as fraud and financial abuse. This paper identifies a response system that consists of fraud vulnerability assessments, compliance checks, whistleblower hotlines, and judicial investigations involving accounting firms, law firms, and specialized corporate investigation agencies that claim this territory. Ukrainian researchers A. Mazaraki, M. Boiko, A. Okhrimenko, S. Melnychenko and T. Zubko (2019) highlighted the influence of factors on the formation of the national tourism system and identified the relationship between the economic security of tourism enterprises and macroeconomic factors. The article (Coval et al., 2009) proves that the securitization process has allowed the transformation of trillions of dollars of risky assets into securities that were considered safe. The author emphasizes two features of structured financial products - the extreme vulnerability of their ratings to moderate inaccuracies in the assessment of underlying risks and their exposure to systematic risks, which largely explain the spectacular ups and downs of structured finance. The disadvantage of this work is that it does not take into account such factors affecting financial security as the condition of fixed assets and the efficiency of the company's core business.

Theoretical and applied guidelines for enterprise management in various fields, based on a comprehensive assessment of financial security and key performance indicators, were considered in the works of O. Amosov (2012), D. Baldwin (1997), I. Blank (2004), A. Boin, P. Hart and S. Kuipers (2018), A. Felton and C. Reinhart (2008), K. Goryacheva (2006), T. Kuzenko, L. Martjusheva, O. Ghrachov and O. Lytovchenko (2010), O. Malyk (2015), A. Matviychuk (2007), V. Orlova (2008), G. Piatnytska and I. Fedulova (2020), G. Portnova and V. Antonenko (2012), A. Yanioglo (2015). Although there are different theoretical approaches to defining the very concept and methods of assessing the level of financial security, most scholars see it as a definition of the margin of financial strength and financial stability. The lack of a scientifically sound methodology for determining the level of financial security in conditions of stable market dynamics has determined the relevance of this research.

AIMS AND OBJECTIVES

The scientific literature discusses methods of assessing financial security by the bankruptcy criterion (Orlova, 2008; Coval et al., 2009; Portnova & Antonenko, 2012; Williams, 2014; Mazaraki et al., 2019), the disadvantage of which is the limited scope of diagnostics. Attempts to build an integral indicator (Tereshchenko, 2006; Matviychuk, 2007; Kuzenko et al., 2010; Piatnytska & Fedulova, 2020; Kharchuk et al., 2021) do not take into account the industry boundaries of the parameters in the calculations and all possible assessment indicators.

The purpose of this article is to improve the methodology for integral assessment of the level of financial security. Achieving this goal involves the following tasks:

- analysis of modern literature related to the methodology for determining financial security;
- formation of a more complete system of evaluation indicators;
- clarification of the limits of changes in parameters.

METHODS

The following methods were used in writing this article: comparison, systematization, induction and deduction, abstract-logical, critical analysis, and graphical modelling. The work is based on a systematic approach to enterprise potential management in domestic manufacturing and trading companies and international corporations in Ukraine. This approach used general and specific methods of cognition, in particular: analysis and synthesis to study the content of financial security in the enterprise, scientific abstraction to substantiate the indicators of financial security of the enterprise, statistical analysis to study the activities of Ukrainian enterprises, economic and mathematical modelling of financial diagnostics.

RESULTS AND DISCUSSION

Current conditions of enterprise performance cannot guarantee financial security to economic entities; this makes the assessment of enterprise financial security an important and almost daily task, taking into account the significant impact of the financial security of an enterprise on its operating efficiency. However, today there is a problem related to the complexity of conducting an adequate financial security assessment procedure since there is no universal method for such an assessment.

The financial security of an enterprise is usually a key element of its economic security. At the same time, it is an independent element and represents such a state of its financial resources, which provides enterprise effective (profitable) performance, protection of financial interests and the possibility for businesses and banks to have their financial opportunities under the influence of various kinds of hazards and threats.

In general, the financial security of enterprises is presented as the mechanism which, on the one hand, ensures the stability of the financial system of the entity using protective financial instruments, and, on the other hand, ensures its efficiency through the rational use of financial resources.

The concept of "enterprise financial security" is interpreted here as:

- a constituent of enterprise economic security (Boin et al., 2018);
- a condition that protects financial interests from threats, provides financial balance, stability, solvency and liquidity, etc. (Blank, 2004);
- the ability to operate efficiently and steadily or to use the potential of enterprises and resources efficiently (Baldwin, 1997);
- the ability of the enterprise to develop and implement a financial strategy independently (Baldwin, 1997; Goryacheva, 2006; Matviychuk, 2007; Piatnytska & Fedulova, 2020);
- risk management activity (Tereshchenko, 2006; Amosov, 2012; Portnova & Antonenko, 2012; Malyk, 2015);
- a system that ensures the stability of important financial proportions of enterprise development or their balanced condition (Goryacheva, 2006; Coval et al., 2009; Kuzenko et al., 2010);
- a specific type of relationship.

The financial security of an enterprise is determined by a number of factors, namely: the level of financial resources, stability of the financial condition of the enterprise, the balance of financial flows and settlement relations, the degree of efficiency of financial and economic activity, the level of control over internal and external risks.

Currently, relatively a small number of scientists are engaged in the problem of managing the financial security of the company. Yet, in the scientific community, it is paid much more attention to the problems of financial security at the state level and crisis management at the enterprise level. However, management of financial security of the enterprise is not less significant than crisis management of the enterprise, because, unlike the second one, prevents crisis situations in advance, neutralizing threats and minimizing risks of different origins. It is appropriate to start with the definition of the essence of such a concept as "management". In theory and practice, there are many approaches to its understanding, in particular, in the researched literature sources (Blank, 2004; Amosov, 2012; Williams, 2014; Mazaraki et al., 2019; Piatnytska & Fedulova, 2020) there are singled out the following approaches: the general approach interprets management as science and art, considers the organization of activities in accordance with the requirements of its objective laws; the functional approach defines management as a set of specific functions, such as planning, organizing, leading and controlling; subjective and objective approach represents management as purposeful influence of the subject of management on its object, which is carried out to achieve a certain goal; according to procedural management it is the process of activity, making and implementing managerial decisions. Having described the essence of the concept of management, we can

synthesize it with the above-described concept of financial security, and give some options for the definitions of financial security management.

From the methodological point of view (Piatnytska & Fedulova, 2020), the management of enterprise financial security is a system of principles and methods for the development and implementation of managerial decisions related to ensuring the protection of its predominant financial and economic interests from internal and external threats. In terms of the general approach (Kharchuk et al., 2021), financial security management means organized actions which ensure the coherence of the operation of all services, units and employees in order to eliminate various threats to steady the enterprise's financial condition. From the point of view of the subject and object approach (Matviychuk, 2007, p. 51), management of enterprise financial security should be considered as a purposeful impact of a relevant financial agent on certain objects which is made in order to achieve the purpose and objectives of management.

Management of the financial security of the enterprise is carried out by distinguishing a separate functional subsystem from the general management system of the enterprise. The necessity of distinguishing such a management subsystem, which is also called the financial security management system, results from an unstable company macro and microenvironment, as well as the need for continuous monitoring of the threats to the financial stability of the enterprise.

In a simplified form, a company's financial security management system can be represented as a system which includes: management bodies, subdivisions and executives who perform their assigned functions and solve their tasks and a set of methods with which management is carried out. However, it is worth paying more attention to the study of the elements of this system. In a broader sense, the enterprise financial security management system consists of the following components: organizational structure, management subjects, management mechanism, management object, management functions and management process.

In theory and practice, there are a number of methods for assessing the level of financial security. In order to assess the advantages and disadvantages of each of the basic methods, it is appropriate to make a classification by analyzing the works of specialists in this field.

So, I. Blank (2004) proposes to analyze the financial security of the enterprise by applying methods of horizontal analysis, vertical analysis, comparative analysis, analysis of financial ratios and integral financial analysis, which include the system of integrated analysis according to the DuPont model, the system of SWOT-analysis of financial security, the object-based system of integrated financial analysis and portfolio analysis.

T. Kuzenko, L. Martjuseva, O. Ghrachov and O. Lytovchenko (2010) apply the following approaches to assessing the financial security of an enterprise: the indicator one, which, according to the authors, includes methods of integrated assessment of financial security based on the analysis of bankruptcy probability and the scoring method; the one, based on the criterion of minimizing the total loss to the security; the resource and functional approach, which uses the components of financial security; the approach based on the criterion of the sufficiency of working capital for economic activity.

In her pieces of research V. Orlova (2008) identifies two main groups of methods for assessing and analyzing financial security of an enterprise: methods and models for direct assessment of financial security and methods for analyzing financial security based on the assessment of the company's potential bankruptcy.

O. Amosov (2012) highlights three approaches to assessing the level of financial security, namely: indicator one, the program and target one, and the resource and functional one.

Consequently, the main methods of assessing financial security can be divided into 3 groups: methods of integrated assessment of financial security; methods of assessing financial security on the basis of analysis of potential bankruptcy; indicator methods for assessing financial security. It is appropriate to consider the basic principles, disadvantages and advantages of each group of methods separately.

Integrated assessment methods involve the formation of the aggregate indicator, which reproduces the values of other partial indicators, adjusted in accordance with their significance and other factors. The integral method simplifies the evaluation process and enables to make comprehensive assessment of the level of financial security of an enterprise which depends on many components.

K. Goryacheva (2006) highlighted the following approaches to assessing financial security of an enterprise: the indicator one, the resource and functional approach, the approach based on the use of the criterion of "minimum aggregate loss incurred to security", the approach based on the assessment of the sufficiency of working capital, as well as the approach based on the assessment of the general condition of financial security of an enterprise.

Thus, representatives of the resource and functional approach (Amosov, 2012) propose to determine the level of financial security (PFS) on the basis of assessing the degree of using financial resources of the enterprise for each functional component, and afterwards to form the integral indicator by expertise. In general, the resource and functional approach uses the following formula:

$$PFS = \sum_{i=1}^n d_i * k_i \quad (1)$$

where: k_i – the value of partial functional criteria of financial security of the enterprise; d_i – share of functional components of financial security of the enterprise; n – the number of functional components of the financial security of the enterprise.

The procedure for determining the level of financial security according to separate functional subsystems is most fully represented in the work of K. Goryacheva (2006), which distinguishes the following functional components: budgetary, monetary, banking, investment, fund and insurance ones.

The main advantages of this method are: first, integration of all the indicators that determine financial security into one indicator; and second, incorporation of all the functional areas of financial security of the enterprise. However, despite the advantages of the resource and functional approach, it has a number of shortcomings. The main one is the subjectivity of determining the significance of the indicators. Also, in this method, the notion of financial security completely copies the process of the assessment of the use of financial resources, which is incorrect to some extent.

To assess the level of financial security there is also used the program and target method, according to which the assessment of financial security is based on the integration of a set of indicators which determine financial security. In this case, there are used several levels of integration of the indicators and such methods of their analysis as cluster and multidimensional analysis.

This method also integrates the entire set of indicators that determine financial security into one indicator, and it also provides complete reliability in the evaluation results. The disadvantage of this approach is the complexity of the analysis which is carried out with the methods of mathematical analysis. Consequently, the program and target approach to the assessment of financial security makes it possible to assess its level accurately, but it is difficult to use and requires a large and reliable database.

The adjusted methods for assessing the level of financial security are based on the calculation of scores for each indicator position with which financial security is assessed. The adjusted methods involve expert analysis with expert interviews and further mathematical processing of the results of the research. The group of the adjusted assessment methods can include a rank method or a score method, which enables to determine the importance of each indicator of financial security of the enterprise while determining its general level based on the weight of indicators, to assign each indicator a certain number of scores, according to the intervals of their values, and also carry-on integral assessment of financial security of the enterprise.

In this case, the advantage is the flexibility of the algorithm used. However, the disadvantages of the method are as follows: subjectivity of expert opinions; uncertainty that arises when applying a large number of indicators; insufficient feasibility of normative values.

Such authors as G. Portnova and V. Antonenko (2012) consider only two methods for assessing financial security: an indicator and a rank one.

The basis for determining the level of financial security is the boundary values of the indicators and their rating. In the process of expert evaluation, each expert is proposed to assess the rating of each indicator, focusing on the score scale. Thus, a system of valuation indicators is created; each of them is assigned a certain rank. The scale of evaluation of the obtained indicators is formed and the mechanism of calculation of the aggregate indicator rating is determined. On the basis of this method, it is possible to make a ranking of both certain indicators and groups of the most significant ones.

So, if the indicator has the above normal value, it is assigned the first grade; below normal, but the above critical one - the second grade; below the critical one - the third grade. The integral security assessment is given in scores and is defined as the sum of the products of the rating of each indicator per class:

$$S = \sum_{i=1}^n R_i * C_i \quad (2)$$

where: S – the sum of scores; R_i – rating of the i -th indicator; C_i – the class of the i -th indicator.

For the indicators, all values of which correspond to the grade I, the number of points is 100, the grade II - 200, and the grade III - 300. Accordingly: the first grade means a high level of financial security; the second grade means a normal level of security; the third grade means a critical level of enterprise security.

There are normalized values of the initial indicators which assess the level of financial security as indicator values.

The method of assessing financial security by the criterion of minimizing total loss is calculated with the help of a partial functional criterion of the financial component of the company's economic security (Kharchuk et al., 2021):

$$PFC = \frac{DL}{(TC+TL)} \rightarrow \max \quad (3)$$

where: *PFC* – a partial functional criterion for ensuring the financial component of the company's economic security; *DL* – total distorted loss according to the financial component of economic security of the enterprise; *TC* – total costs incurred by the enterprise for implementation of measures to ensure the financial security of the enterprise; *TL* – total losses incurred by the enterprise according to the financial component of economic security of the enterprise.

Thus, there is determined overall effectiveness of the measures which ensure the financial component of economic security, which are taken to prevent possible losses from negative influence. However, the disadvantage of this method is that the above criteria are very difficult to calculate because of the lack of necessary accounting and statistical data. Also, not all the spheres of financial activity of the enterprise are taken into account.

The method of assessing the financial security of the enterprise by the criterion of its value enables to assess financial security viewed from the possibility of increasing its market value. The value-based approach to assess enterprise financial security emerged when a company was considered a special investment product that has utility and value for investors. According to this approach, the main objective of enterprise financial security management is to maximize the enterprise value. The issues of enterprise value are closely related to such an important indicator of financial security condition as profit. When an enterprise has no profit or it incurs losses there is no reason to speak about its financial security. The advantage may be the financial security of the company viewed from its unusual side, which makes this method useful when it is used in combination with the traditional ones. Possible disadvantages are when the assessment of the financial condition of the enterprise is not taken into consideration when using this method.

Methods for evaluating the probability of bankruptcy are also used to assess the financial security of the enterprise. These methods enable to identify financial insolvency of the enterprise, which is one of the indicators of financial security.

In foreign countries multi-factor models of well-known Western economists such as Altman (Blank, 2004; Tereshchenko, 2006), Beaver (Tereshchenko, 2006), Depalyan (Matviychuk, 2007), Springate (Tereshchenko, 2006; Matviychuk, 2007), Taffler (Tereshchenko, 2006) and others are widely used to assess the risk of bankruptcy and creditworthiness of enterprises. However, the use of the above-mentioned models in the enterprises of the domestic economy is not simple. Monitoring of Ukrainian enterprises according to these models showed that they were not completely suitable for assessing the risk of bankruptcy because of the use of different methods of reflecting inflation factors, different capital structures, and significant differences in the legislative framework.

Domestic methods of assessing financial security on the basis of probable bankruptcy analysis include the A. Matviychuk model (Matviychuk, 2007) and O. Tereshchenko model (Tereshchenko, 2006). One should describe each model separately.

A. Matviychuk (2007) offers the following model in order to assess the probability of bankruptcy:

$$Z = 0,033X_1 + 0,268X_2 + 0,045X_3 - 0,018X_4 - 0,004X_5 - 0,015X_6 + 0,702X_7 \quad (4)$$

where: *X*₁ – current assets–to–fixed assets ratio; *X*₂ – net sales–to–current liabilities ratio; *X*₃ – net sales–to–equity ratio; *X*₄ – assets (of the balance sheet)–to–net sales ratio; *X*₅ – net working capital–to–working capital ratio; *X*₆ – loan capital–to–assets (of the balance sheet) ratio; *X*₇ – equity–to–debt ratio.

When using this model to evaluate the financial condition of an enterprise, the value of *Z* is more than 1,104, this indicates satisfactory financial condition and low probability of bankruptcy. The higher the value of *Z*, the more stable is the company. If the *Z* value for an enterprise is less than 1,104, there appears a threat of a financial crisis. The probability of bankruptcy increases when the value of *Z* lowers.

The advantages of the model are as follows: it takes into account a wide range of indicators of economic activity of enterprise from different forms of accounting statements and adapts to the peculiarities of domestic enterprises. However,

there is not much differentiation in the assessment of financial situation and probability of bankruptcy. Also, the industry specialization of enterprises is not taken into account.

Like the A. Matviychuk model, the O. Tereshchenko model is the most optimal to determine the probability of bankruptcy. The Tereshchenko O. model is the following (Tereshchenko, 2006):

$$Z = 1,5X_1 + 0,08X_2 + 10X_3 + 5X_4 + 0,3X_5 + 0,1X_6 \quad (5)$$

where X_1 – net income-to-liabilities ratio; X_2 – assets (of the balance sheet)-to-liabilities ratio; X_3 – net income-to-the average assets ratio; X_4 – profit-to-revenue ratio; X_5 – inventories-to-revenue ratio; X_6 – net sales-to-capital ratio.

When $Z > 2$ bankruptcy is not probable, when $1 < Z < 2$ financial stability is violated, when $0 < Z < 1$ there is a risk of bankruptcy.

There are such advantages of using this model: it takes into account a large number of indicators of economic activity of the enterprise, its forecast is rather reliable, it is handy in use, adaptable to domestic statistics, takes into account the peculiarities of the enterprise industry by way of using various modifications of the basic model for the enterprises of various profiles. The disadvantage is the absence of a profound classification of financial stability.

As the result of the analysis of methods and models for evaluating the financial security of enterprises, one can state that all the existing approaches to the assessment of financial security, along with the strengths, have a number of shortcomings. These disadvantages are associated with a limited set of indicators used for such evaluation, with bad adaptation to domestic business conditions, they may be difficult to calculate and interpret, and may also give controversial results. Consequently, for the most reliable evaluation result, one should use different methods integrally to assess the enterprise environment and provide more complete information as to the condition of financial security of the enterprise.

On the basis of the works related to the problems of financial security assessment, it is possible to group the methods of assessing the condition of financial security of enterprises in the following way:

- methods of integrated assessment of financial security (a scoring method of assessment of the indicators of financial condition, program and target method, resource and functional method);
- methods of evaluation based on the analysis of probable bankruptcy (domestic models of Matviychuk, Tereshchenko and the method of Sablyuk, foreign models of Beaver, Depalyan, Altman);
- indicator methods (by the criterion of minimization of total loss, by the criterion of sufficiency of working capital, by the criterion of the enterprise value).

The advantage of integral assessment methods is a simplification of the evaluation procedure and possibility to make an integral assessment of the level of financial security of the enterprise, which depends on many components, but the disadvantage is certain subjectivity when using weight ratios or rating.

There are such advantages of using the models of determining bankruptcy probability made by domestic authors: they take into account a large number of indicators of economic activity of the enterprise, their forecast is rather reliable, they are handy in use, adaptable to domestic statistics, take into account the peculiarities of the enterprise industry by way of using various modifications of the basic model for the enterprises of various profiles. The disadvantage is the absence of a profound classification of financial stability.

The advantage of indicator methods is that they are not difficult to use, as well as the fact that there is an opportunity to track negative trends fast. However, there are disadvantages: the use of these methods is largely dependent on the identifying of thresholds, the values of which may vary depending on the environmental conditions, which are not influenced by the company. It is also very difficult to set thresholds for enterprises because they differ for enterprises in different industries.

Taking into account that to determine the level of financial security of the enterprise one should determine the efficiency of its activity, we suggest using the indicators from the following list (Table 1).

Table 1. Main indicators which analyze enterprise financial security. (Source: summarized according to (Baldwin, 1997; Blank, 2004; Goryacheva, 2006; Coval et al., 2009; Amosov, 2012; Portnova & Antonenko, 2012; Boin et al., 2018; Mazaraki et al., 2019; Piatnytska & Fedulova, 2020; Titenko, 2022))

Group of indicators	Indicators
Liquidity and solvency indicators	<ul style="list-style-type: none"> ▪ cash ratio; ▪ quick ratio; ▪ current ratio; ▪ liquid assets ratio; ▪ current-to-fixed assets ratio; ▪ assets balance ratios; ▪ accounts payable-to-accounts receivable ratio
Turnover (business activity) indicators	<ul style="list-style-type: none"> ▪ assets turnover (ratio); ▪ production inventory turnover (ratio); ▪ finished goods turnover (ratio); ▪ accounts receivable turnover (ratio); ▪ accounts payable turnover (ratio); ▪ equity turnover (ratio); ▪ total assets turnover (in days); ▪ days inventory outstanding; ▪ finished goods turnover (in days); ▪ days sales outstanding; ▪ days payables outstanding; ▪ equity turnover (in days)
Profitability indicators	<ul style="list-style-type: none"> ▪ return on sales; ▪ return on production; ▪ return on working capital; ▪ return on net working capital; ▪ return on equity; ▪ return on assets; ▪ return on fixed assets; ▪ return on investment; ▪ payback period (both of equity and total capital);
Financial stability indicators	<ul style="list-style-type: none"> ▪ equity ratio; ▪ equity-to-total assets ratio; ▪ leverage ratio; ▪ debt ratio; ▪ self-financing ratio; ▪ current assets-to-equity ratio; ▪ equity plus long-term debt-to-total assets ratio; ▪ current assets coverage ratio; ▪ reserves-to-production ratio; ▪ short-term debt ratio; ▪ long-term debt ratio

It should be noted that the indicators of the second and third groups are the indicators of the analysis of enterprise efficiency.

Let us analyze the level of financial security of the PJSC "Obolon" using the indicator method and visual image in graphic representation. To assess financial and property condition and financial security, there were analyzed the results of this company's activity for the years 2020-2021. Diagnostic parameters are classified into five groups: assessment of property status, solvency, profitability, business activity (turnover) and financial stability.

With the help of the financial diagnostics of the enterprise "Obolon" it is possible to calculate financial indicators that will characterize enterprise financial security as well as to observe what conditions will be expected in the planned year. Financial diagnostics of the PJSC "Obolon" will be the following (Table 2).

Table 2. Indicators of financial and property diagnosis of the private joint-stock company «Obolon».

Indicators	Threshold	2021	2022	Forecasted year
Property status				
Fixed capital depreciation ratio	0.25	0.51	0.53	0.57
Fixed capital renewal ratio	0.01	0	0	0
Share of current production assets	0.85	0.384	0.28	0.098
Current-to-fixed assets ratio	0.7	0.319	0.189	0.058
Solvency				
Cash ratio	0.2	0.008	0.012	0.031
Quick ratio	0.7	0.203	0.340	0.605
Current ratio	2	0.498	0.698	1.192
Total current ratio	2	0.498	0.698	1.192
Profitability				
Operating profitability	0.1	-0.077	0.049	0.380
Return on sales	1	-5.21	0.997	31.675
Return on assets	0.2	-0.046	0.008	0.104
Return on equity	0.24	-0.27	0.096	0.585
Turnover				
Capital (assets) turnover ratio	2	0.893	0.86	0.33
Mobile assets turnover ratio	6	2.325	3.09	3.37
Inventory turnover ratio	8	1.159	2.16	4.02
Yield on capital investment (per unit of assets)	20	1.595	1.23	0.37
Financial stability				
Equity ratio	=>0.5	0.174	0.33	0.36
Own current assets-to-equity ratio	=>0.5	-2.54	-1.2	-5.1
Equity plus long-term debt-to-total assets ratio	=>0.7-1	-0.57	-1	-9.2
Current assets coverage ratio	0.6-0.8	-1.01	-0.4	0.16

Let us rate the indicators of the financial condition of the PJSC "Obolon", shown in Table 2, according to the formulas: $R_i = \frac{F_i}{F_{i_{th}}}$, or $R_i = \frac{F_{i_{th}}}{F_i}$ (Table 3). For the stimulant indicators it is used the first rating formula, for the destimulant indicators – the second one. Accordingly, F_i is the value of an indicator, $F_{i_{th}}$ is the threshold of the indicator.

Table 3. The results of the rating of the indicators which show financial and property diagnosis in the private joint-stock company «Obolon». (Source: made by the authors according to (Kharchuk et al., 2021; Official website, 2023)

Indicators	Weight	2021	2022	Forecasted year
Property status				
Fixed capital depreciation ratio	0.24	2.0201	2.12	2.26
Fixed capital renewal ratio	0.31	0	0	0
Share of current production assets	0.2	2.20	3.04	8.63
Current-to-fixed assets ratio	0.25	2.19147	3.70	11.94
Solvency				
Cash ratio	0.22	40.21	28.77	11.52
Quick ratio	0.24	0.291	0.48	0.86
Current ratio	0.3	0.25	0.35	0.59
Total current ratio	0.24	0.25	0.35	0.59
Profitability				
Operating profitability	0.21	-0.077	0.049	0.380
Return on sales	0.26	-5.2093	0.997	31.675
Return on assets	0.28	-0.046	0.008	0.1048
Return on equity	0.25	-0.267	0.092	0.585
Turnover				
Capital (assets) turnover ratio	0.28	0.893	0.86	0.33
Mobile assets turnover ratio	0.27	2.325	3.09	3.37
Inventory turnover ratio	0.14	1.159	2.16	4.02
Yield on capital investment (per unit of assets)	0.31	1.595	1.23	0.37
Financial stability				
Equity ratio	0.35	0.174	0.33	0.36
Own current assets-to-equity ratio	0.21	-2.54	-1.2	-5.1
Equity plus long-term debt-to-total assets ratio	0.31	-0.57	-1	-9.2
Current assets coverage ratio	0.13	-1.01	-0.4	0.16

In Table 4 and Figure 1, there are presented the results of the financial diagnostics of the PJSC "Obolon", taking into account the weight of individual indicators and the calculation of the aggregated indicator of financial diagnostics of the enterprise.

Table 4. The results of calculation of the aggregated indicator of financial security in the private joint-stock company «Obolon».

Blocks of assessment	Weight	2021	2022	Forecasted year
Property status	0.16	0.5540786	0.429003	0.1500701
Solvency	0.18	0.7074619	0.7104273	0.7
Profitability	0.25	0.45	0.1533383	0.1611998
Turnover	0.2	0.4798655	0.2212501	0.2694053
Financial stability	0.21	1	1	1
Aggregate indicator	-	0.7719688	0.489102	0.9681219

After all the calculations made it was revealed a rather low level of profitability of the enterprise, that is, the efficiency of its activity, and these are the indicators which one should pay attention to when making plans for the next year.

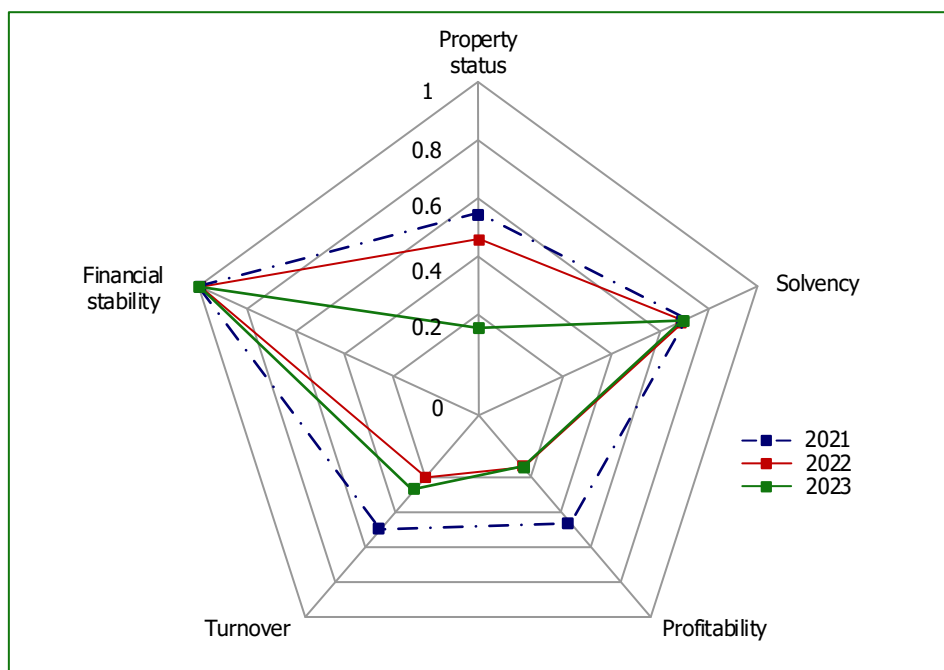


Figure 1. Financial diagnosis of the private joint-stock company «Obolon». (Source: made by the authors based on the characteristics of financial and property status of the PJSC "Obolon" (Official website, 2023))

As it is shown in the graph, sufficient values of these indicators are expected for the planned year. Property status is at a low level, which considerably reduces the level of financial security. However, solvency and profitability are better and have an advantage over other indicators. The company's business activity is expected to recover, which reflects the increase in its operating efficiency.

CONCLUSIONS

Consequently, all the existing approaches to the assessment of financial security, along with their strengths, have a number of shortcomings. These disadvantages are related to the limited set of indicators used for evaluation, with non-adaptability to domestic conditions for doing business, may be complex in calculation and interpretation, and may also give controversial results to each other. For the most reliable evaluation result, various methods should be used integrally in order to assess the condition of the enterprise from different sides and provide more complete information as to the financial security condition of the enterprise.

The result of the research is made to obtain informative parameters which give a precise and objective assessment of the financial and property status and financial security condition of the enterprise in order to diagnose disadvantages in its activity and find reserves to improve its situation. Together with the analysis of the level of financial security, it was analyzed the activity of the PJSC "Obolon" in 2021 and 2022. The above indicators testify to the fact that the enterprise is solvent, and profitable but does not have sufficient material and financial resources for its development, which results in its performance with maximum use of the existing material support.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

Conceptualization: Tetiana Zubko, Maryna Korzh, Anastasia Kasianova, Iryna Vavdiichyk, Kateryna Sydorenko

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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ОСОБЛИВОСТІ СИСТЕМИ ОЦІНКИ ФІНАНСОВОЇ БЕЗПЕКИ УКРАЇНСЬКИХ ПІДПРИЄМСТВ

Метою дослідження є вдосконалення системи оцінювання рівня фінансової безпеки підприємства. Предметом дослідження є системотворчі процеси побудови та оцінювання рівня фінансової безпеки підприємства. У дослідженні застосовані методи теоретико-логічного узагальнення. У статті описано ключові моменти, які характеризують методику оцінки фінансової безпеки підприємства. Результати дослідження полягають у формуванні системи показників оцінювання та управління фінансовою безпекою для виробничо-торговельного підприємства. Автори обрали набір показників, які використовують для оцінки, залучаючи метод індикатора та візуальне зображення в графічному зображенні. Проаналізовано результати діяльності підприємства за три роки з метою оцінки фінансово-майнового стану та фінансової безпеки; діагностичні параметри класифіковано на п'ять груп: оцінка майнового стану, платоспроможності, рентабельності, ділової активності (обороту) та фінансової стійкості. Уточнено зміст і проблеми визначення показників фінансової безпеки та ефективності діяльності підприємства на прикладі виробничо-торговельного підприємства.

Ключові слова: фінансова безпека підприємства, ефективність діяльності, рівень економічної безпеки, індикатори, показники, фінансово-майновий стан підприємства

JEL Класифікація: C13, G32, O16