Theoretical and methodological foundations of ensuring financial and economic stability of enterprises

Abdumalik Kadirov

Abstract. This article describes how to ensure the economic sustainability of the industrial enterprises of Uzbekistan. Also, scientists analyzed the approaches of economists estimation of economic and mathematical methods of “sustainability” and “economic sustainability” and their studies. On the basis of these data, the author proposed a system of evaluation of the economic sustainability in industrial enterprises.

1 Introduction

One of the priority directions of economic reforms carried out in Uzbekistan is further acceleration of structural changes in the economy, modernization of industrial enterprises, technical upgrading and diversification, wide introduction of innovative technologies into production. Although the stable growth of the country's economy is directly related to the rapid development of industrial sectors and the economic stability of industrial enterprises.

In particular, in the context of Uzbekistan's rapid integration into the world economy, the ongoing crisis in the world economy and unstable market conditions on world markets, the importance and relevance of developing measures to ensure and improve the economic sustainability of enterprises is increasing.

Despite the fact that there are specific variations in approaches to the concept of economic stability, economic scientists believe that it is worth determining the normative volume of the analyzed indicators. As long as the change in the normative quantity, that is, the exit from the established border, represents a decrease in the level of economic stability.

In practice, there are methods that are constantly used, which include:

- set limits on the basis of the maximum and minimum values of activity of the enterprise;
- determination of the limit of the stable state of the enterprise based on the assessment and analysis of data for the period based on past indicators.

It is known that the evaluation can be carried out both on the basis of static (for the reporting period) and dynamic indicators (growth rate, absolute growth, etc.). In this regard, it is worth looking at his scientific work by M. N. Kazhin [9], S.Y. Pleshkov [14], G.R.
Yarullin [20], in which proposed indicators characterizing one or another aspect of the economic sustainability of the enterprise. In this regard, Uzbek scientists [2, 10] focused on the main financial aspects when assessing the stability of enterprises. Moreover, the economist Gurbanov Z.N., with a macro-level approach to indicators representing economic stability, gave the following three indicators of “economic growth”, that is, depending on how the gross domestic product grows, the formation of part of the state budget revenues and the reduction of the tax burden [12].

2 Methods

The methods of calculating and assessing the economic stability of enterprises based on dynamic norms were among the first performed by the economist I.M. Siroezhin [2], later N.N.Zakharchenko [9], N.N.Pogostinskaya [21], A.V.Zavgorodnaya [8] and R.L.Dzhambekova [7] and N.A.Savinskaya [22] is improving in scientific research. Let’s briefly describe this method.

It is possible to reflect the activity of any enterprise with the dynamics of certain economic indicators, in which mutual harmony and consistency can change with the transition of the enterprise from one state to another. The interdependence of all indicators is characterized by the concept of “operating mode”. Each mode of operation of the enterprise interprets the system of established indicators, if they are classified according to growth rates, there is a normative mode of operation of the enterprise, in other words, a normative system of indicators (dynamic norm). Maintaining such a dynamic (consistent) growth for a long time allows the company to work in an optimal manner. The assessment of the enterprise is carried out on the basis of comparing the actual dynamic range of the enterprise with the normative range.

An essential aspect of this approach, in our opinion, is the absence of the need to attach normative meaning through real expression. The dynamic norm expresses the relationship between the indicators that determine the growth rate, allowing to maintain production processes and increase efficiency, which corresponds to the goals of any industrial enterprises.

Despite the widespread use of dynamic norms in the assessment of economic activity, in our opinion, it is worth adapting this approach taking into account the specific characteristics of each network operating system and development, as well as paying attention to the following aspects:

- the severity of stability, to determine the composition of economic indicators;
- determination of the dynamic norm based on the average value determined for the analyzed network of indicators;
- comment on the results obtained during the evaluation.

The interpretation of the evaluation results in the scientific work analyzed above is consistent with the fact that if it corresponds to the norm of the operating mode of the enterprise, then the enterprise is economically stable. However, stability is a relative concept. Thus, we can only assume that the company will increase or decrease its economic stability. Besides, in addition to achieving full compliance with the dynamic norm of the actual operating mode of the enterprise at the time of its creation, will it be able to maintain the achieved result, if not, to what extent will the enterprise be able to reduce one or more indicators.

Today we will consider economic and mathematical methods for calculating and evaluating integral indicators of economic stability, which are widely used. Because when using static and dynamic indicators, the calculation methods are fundamentally different.

First we will look at static indicators.
We can use integral exponents of the geometric mean, which consist of separate indicators reflecting the stability of $B_i$.

$$B_i = \sqrt[n]{\prod_{n} K_n} \quad (1)$$

Here $K_n$ is an indicator of the stability of one of the divisions of the enterprise; $n$ – number of divisions in the enterprise.

This method is easy to use. The disadvantage of this method is that it is based on low number indicators, the value of which is usually close together. Also, the actual number of indicators cannot be used without preliminary recalculation, which further complicates the evaluation procedure.

Economic stability $B_i$ is determined by the use of methods of multiplying coefficients in some scientific work:

$$B_i = \prod_{i=1}^{n} K_{ij} \quad (2)$$

Advantages and disadvantages of the first and second methods almost do not differ. Some authors [15] represent the method of adding integral indicators, that is, by adding real quantities:

$$K_j = \sum_{i=1}^{n} \frac{x_{ij}^h}{x_{ij}^m}; \quad i = 1, ..., n; \quad j = 1, ..., m \quad (3)$$

Here $x_{ij}^h$ – $j$-th actual amount of the indicator $i$ from the group indicators; $x_{ij}^m$ – administrative amount of the $i$ indicator from the $j$-th group indicators.

The positive aspect of this method, in our opinion, is that the evaluation can be based on different normative values. However, an important drawback of such an approach is that all changes in indicators have become similar, that is, the increase in any considered indicators indicates a decrease in stability, while the growth of the economic stability of the enterprise and vice versa decreases. In addition, in this method, there is a possibility of making mistakes in assessing the economic stability of the enterprise. In particular, it is possible to observe such cases when the majority of indicators are far behind a certain indicator of their value.

Also, in the analyzed scientific work, two additional indicators are identified, for which the form in which this method is added is used, that is, the sum of positive and negative deviations of individual indicators in relation to the normative value.

$$K_{j}^+ = \sum_{i=1}^{n} x_{ij}^+; \quad K_{j}^- = \sum_{i=1}^{n} x_{ij}^-; \quad j = 1, ..., m \quad (4)$$

$$x_{ij}^+ = \begin{cases} \frac{x_{ij}}{x_{ij}^m}, & \text{if } x_{ij}^h > x_{ij}^m; \\ 0, & \text{if } x_{ij}^h < x_{ij}^m. \end{cases} \quad (5)$$

$$x_{ij}^- = \begin{cases} \frac{x_{ij}}{x_{ij}^m}, & \text{if } x_{ij}^h < x_{ij}^m; \\ 0, & \text{if } x_{ij}^h > x_{ij}^m. \end{cases} \quad (6)$$

According to several scientists, one of the common methods of expressing stability is the distance method [16–24]. This method is also based on the norms of indicators similar...
to other methods that allow the use of various homogeneous indicators in the evaluation process.

However, when using this method, it is impossible to determine the actual value of the economic stability of the enterprise, which in most cases is determined by the best indicators selected for comparing enterprises. That is, if the leader whose indicators are the highest is removed from the enterprise evaluation group, then the amount of stability at all other enterprises will increase. Also, this method cannot be supported if the indicators are negative.

This method has been improved in the work of the authors' society, resulting in a number of advantages, that is, it is also possible to take negative expressions when calculating stability indicators. The total number of reviews ranges from 0 to 100, stability is determined at the highest and lowest levels.

In this method, the lowest and highest values for each indicator can be assigned based on the highest indicators in the network, the planned values of which are based on expert estimates.

The standard value of each individual indicator is expressed as:

\[ x_j = \frac{\alpha_{h_j} - \alpha_{min_j}}{\alpha_{max_j} - \alpha_{min_j}} \]

where

\[ 0 \leq x_j \leq 1 \]

\[ x_j = 0 \quad \text{if} \quad \alpha_{h_j} = \alpha_{min_j} \]

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\[ \alpha_{max_j} \geq \alpha_{min_j} \]

\[ j = 1, \ldots, m \]

\[ B_i = \frac{\sum_{j=1}^{m} x_j}{m} \times 100 \]

\[ B_i = \frac{X_{max} - X}{X_{max} - X_{min}} \]
\[ A_i = (a_{ij}, \ldots, a_{iN}) \]

\[ iN = \sum_{j} a_{ij} \]

The highest indicator of the enterprise for a certain period of time is considered as a normative value. After that, their standardization is carried out:

\[ x_{ij} = \frac{a_{ij}}{b_{ij}} \]

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The above formula \( 1.11 \) is used for such indicators that its growth represents an increase in stability. \( 1.12 \) - formula is used for indicators that represent a decrease in real value at the time of increasing economic stability.

The integral indicator of economic stability is determined by the following formula:

\[ B_i = \sum_{j} \sum_{i} l_i B_{ij} \eta_{ij} \]

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Here, \( B_i \) – economic stability of the enterprise; \( l_i \) – of the indicators in the group \( i \) \((i = 1, \ldots, m)\); \( b_{ij} \) – coefficient of the ratio of the quantity of similar indicators of a pioneer enterprise with indicators \( j \) in the \( i \) -th group of a particular enterprise; \( c_{ij} \) – the coefficient of the ratio of the quantity of similar indicators of a pioneer enterprise with indicators \( j \) in the \( i \) -th group of a particular enterprise.

The value of the coefficient of significance is determined by the average expert assessment. Aitmukhametova I.R. [1] offers a method for assessing the economic stability of an enterprise using ratings and points. In this, the integral indicators are determined as the average sum of the analyzed indicators, while the degree of significance is based on the expert assessment. Then he determined the highest and lowest amount, the color (level) of the indicators and the time interval. The sum of colors (degrees) determines the value of the complex of indicators.

After that, factors affecting the economic stability of the enterprise are formed. The highest influencing factors are determined on the basis of expert assessments. S.V. Chikishev [18] in his scientific work proposed the following method of assessing economic stability. In particular, indicators are selected that correspond to the goals of the enterprise, which were first presented by experts. Then, based on the opinion of experts, a corresponding general assessment of the specialization of enterprises is carried out, which is reflected in the following formula:

\[ x_i = \sum_{k} v_{ik} r_k \]

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if there is $x_i < 0.5$, then this indicator is excluded from the evaluation. For $k = 1, ..., m$ and $i = 1, ..., n$, the coefficient of in-depth knowledge of the expert $k$ is calculated as

$$\sum_{k=1}^{m} r_k = 1$$

The degree of agreement with the expert opinion is determined by the coefficient of concordation:

$$W = \frac{12 \cdot S}{m^2(n^3 - n)}$$

The coefficient of concordance indicates the consensus of the opinions of experts, and this coefficient is considered satisfactory if it is equal to and higher than 0.5.

At the next stage, a unit of measurement is installed on the indicators by experts. Then each group of indicators and indicators is calculated on their significance, after which an indicator of economic stability is determined.

From the above research work analysis, it can be seen that many authors use expert questionnaires in assessing economic stability, which leads to difficulties in finding and selecting experienced, educated experts. In addition, these requests come from serious inaccuracies in mathematical calculations. As you know, the opinion of experts is an important source of information in carrying out any analysis.

In accordance with the methods mentioned above in the scientific work, it is desirable to carry out the assessment of economic stability on the basis of dynamic norms in three stages:

1. Couple comparison to determine the normative indicator:

$$k_{ij} = \begin{cases} k_{ij} = 1, & \text{if } a_i > a_j, \text{and } j > i \\ k_{ij} = -1, & \text{if } a_i < a_j, \text{and } j < i \end{cases}$$

where $k_{ij}$ is the matrix $i$ series and $j$ column intersection value; $a_i$ is the growth rate of the indicator; $a_j$ is the growth rate of the indicator.

2. To determine the actual performance of a pair comparison based on the real state of the enterprise, similar to the first stage.

3. Comparison of normative and real indicators, as well as calculation of the coefficient of general economic stability, it can be determined by the following formula.
\[ B_i = \frac{\sum_{i=1}^{r} \sum_{j=1}^{r} k_{ij}^+}{\sum_{i=1}^{r} \sum_{j=1}^{r} |k_{ij}|} \]

3 Conclusion

The disadvantage of evaluation in this method is that the condition in which the growth rate of two indicators is equal is not taken into account. However, an important advantage of this approach, as already mentioned above, is that it is possible to compare the indicators evaluated using static indicators. This makes it possible to base the economic essence of the change in the boundaries of many indicators.

3 Conclusion

Also, in our opinion, it is worthwhile to pay attention to the following requirements in relation to improving the method of assessing the economic stability of industrial enterprises:

1. Evaluation of the economic stability of industrial enterprises should be carried out taking into account the characteristics of each sector, using the average indicators on the sectors. Because, external and internal factors affect each of the network enterprises in a specific way, which leads to uncertainties in the implementation of mathematical calculations.

2. Indicators that characterize the economic stability of industrial enterprises are directly related to the income and profit calculated as a result of the activities of enterprises, the effective use of production resources (fixed assets, working capital and labor resources.

3. When assessing the economic stability of industrial enterprises, it is necessary to use as little as possible the method of expert evaluation, which is, first, if there are uncertainties in the indicators that are carried out by the survey, and secondly, the possibility of finding and selecting experienced experts is limited.

References


