

Analysis of financial stability and forecasting bankruptcy

Azizakhon F. Gafurova¹

Abstract

This article analyzes the financial condition of the enterprise, the purpose of which is to influence the financial results of the enterprise. It is necessary to take into account many indicators and factors, such as maintaining liquid assets of the asset structure and preventing the risk of insolvency to increase profits. Also, for the analysis, the main analytical coefficients were calculated; in addition, the Altman model was used to determine the risk of bankruptcy of the enterprise.

1 Introduction

The main goal of any activity is to make a profit. Naturally, we spend financial resources on any activity, only in order to increase our invested amount. And these are not the demands of our times, making a profit, increasing profits, was relevant even a thousand years ago, and we can say for certain, it will have its significant role in the future. The target setting of the company's policy in the field of working capital management is to determine the volume and structure of current assets, sources of their financing and the ratio between them, sufficient to ensure long-term production and effective financial activity. Such an interpretation is of a strategic nature, with a focus on the qualitative growth of production efficiency indicators, for example, return on assets, turnover of working capital, etc., involving the establishment of the optimal size of current assets and providing for investments in non-current assets, as assets that give higher return [1]. Analysis of financial stability begins with checking the availability of reserves and costs by sources of formation. Thus, the ratio of the cost of working capital and the value of own and borrowed sources of their formation determines the enterprise's financial stability [2].

2 Material and Methods

For a more disclosed enterprise analysis, JSC "Toshkentdonmahsulotlari" needs financial statements for several years, according to Table 1.

There are four main types of financial stability of an enterprise:

1. The absolute stability of the financial condition shows that our working capital fully covers stocks and costs. The enterprise practically does not depend on loans. This situation belongs to the extreme type of financial stability; in practice, it is quite rare. However, it cannot be considered as ideal since the company does not use external sources of financing in its economic activities.

^{*1} Basic Doctoral student, Tashkent Financial Institute, Tashkent, Uzbekistan. Email: g_aziza@mail.ru Orcid: 0000000188525028

Three-dimensional indicator $S = (1; 1; 1)$ or $\Delta OWC > 0$, $\Delta BSC > 0$, $\Delta SC > 0$

Table 1. Financial analysis stability

Indicators	Symbols	2017	2018	2019
1	2	3	4	5
1. Owners equity	OE	26765079	58115713	35265685
2. Long-term assets	LA	28460436	15536879	34756928
3. Own working capital (line1 – line2)	OWC	-1695357	42578834	508757
4. Long-term loans and borrowings	LLB	0	5586023	0
5. Availability of own and long-term borrowed funds for the formation of stocks and costs (line3 + line 4)	ASC	1695357	48164857	508757
6. Short-term loans and borrowings	ShLB	50045936	50909659	91342018
7. The total value of the main sources (line 5 + line 6)	TMS	48350579	99074516	91850775
8. Inventories and costs	IC	78386619	68630512	98838155
9. Surplus (+), shortage (-) of own working capital (line 3 – line8)	ΔOWC	80081976	26051678	98329398
10. Surplus (+), lack (-) own and long-term borrowed sources of formation of stocks and costs (line5 – line8)	ΔBSC	80081976	20465655	98329398
11. Surplus (+), shortage (-) of the total value of the main sources of formation of stocks and costs (стр.7 – стр.8)	ΔSC	30036040	30444004	6987380

12. Three-component indicator of the type financial stability	$S =$			
		0,0,	0,0	
	ΔOWC	} 0	} 0	} 0
	ΔBSC			
ΔSC				

2. Normal financial stability

The company makes optimal use of its own and credit resources. Current assets exceed accounts payable. These are, first of all, normal solvency, efficient use of borrowed funds, high profitability of production activities.

Three-dimensional indicator $S = (0; 1; 1)$ or $\Delta OWC < 0, \Delta BSC > 0, \Delta SC > 0$

3. An unstable financial condition is characterized by a violation of solvency: the company is forced to attract additional sources of covering reserves and costs. There is a decrease in the profitability of production. However, there is still room for improvement.

Three-dimensional indicator $S = (0; 0; 1)$, or $\Delta OWC < 0, \Delta BSC < 0, \Delta SC > 0$

4. A critical financial condition is the verge of bankruptcy: the presence of overdue accounts payable and receivable and the inability to pay them off on time. In a market economy, with repeated repetition of this situation, the enterprise is threatened with bankruptcy.

Three-dimensional indicator $S = (0; 0; 0)$, or $\Delta OWC < 0, \Delta BSC < 0, \Delta SC < 0$.

If we examine the data from 2017, 2018, and 2019, the company of JSC "Toshkentdonmahsulotlari" is financially unstable, as shown by the study of indicators.

In 2018, the company resorted to borrowed funds, and the overall picture became a little better, but you should not make hasty conclusions since 2019. The indicators signal a critical financial condition. Sources that weaken financial tension can be temporarily free own funds (funds, economic incentives, financial reserves), borrowed funds, the excess of regular accounts payable over accounts receivable, bank loans to replenish working capital [3].

It is also necessary to take into account the factors that affect financial sustainability.

The factors that influence the financial stability of the enterprise are highlighted. They can be internal and external. At the same time, such a classification is necessary in the management of financial stability since it allows for such internal changes in response to external influences, which will make it possible to ensure the balance of the environment and activities of the organization. Among the factors of internal financial stability of enterprises, the composition and structure of products or services provided, the amount of paid-in authorized capital, the state of property and financial resources, including reserves, their composition and structure, technology and model of production organization are distinguished. Their general importance reveals the level of influence of these factors on the financial stability of the enterprise. Production activities determine it, also depending on the professionalism of the company's management apparatus. Today, many failures of different companies are largely due to the insufficient level of qualifications and incompetence of managers, who do not take into account changes in the factors of the internal and external environment. Also, the company's stability is ensured not only by the total amount of costs but also by the existing costs of enterprises, their division into fixed and variable, for example, the cost of energy, raw materials, transportation of products.

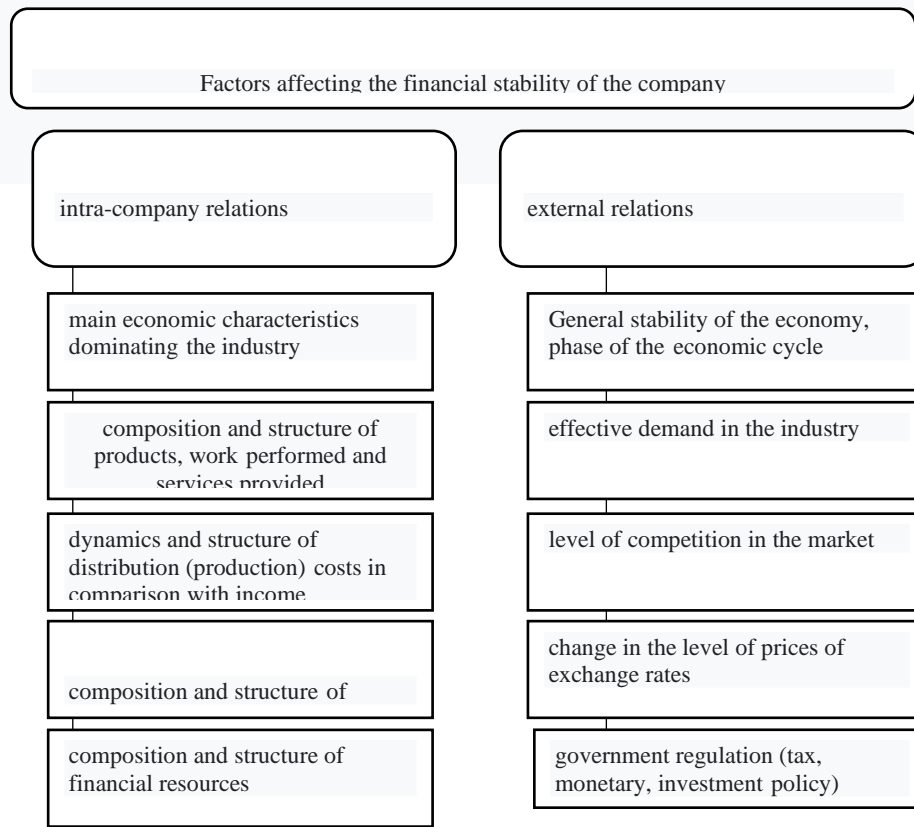


Fig. 1. Factors affecting financial stability [4].

Among other factors of the financial stability of the enterprise, it is customary to distinguish the composition, structure, strategy and financial management. Thus, the presence of a company of certain own financial resources, including profit, makes it possible to be competitive. It should be noted here the importance of directing most of the profits to expand production activities. Since analyzing the financial stability of a company, profit management comes to the fore [5]. As for the external factors of the financial stability of the enterprise, it should be noted that the direct influence determines the system of conditions and factors affecting the organization, as well as the forms and results of financial activities that are formed in the process of financial relations with counterparties in financial transactions. The implementation of effective financial relations with such counterparties in financial activities allows us to manage the relevant conditions and factors in the direction necessary for the enterprise [6]. The analysis of a three-component indicator is not enough to determine the financial stability and the reasons for this situation. Therefore, an analysis of the financial stability ratios is necessary. The purpose of these coefficients is to detail further the assessment of the financial stability of the enterprise, an additional reflection of certain aspects of the main indicator of the financial strength of the enterprise [7].

3 Results

First, it is necessary to calculate the indicators that determine the state of working capital. These include the ratio of the provision of own funds. In this enterprise, this ratio was -0.01595; 0.380912; 0.0037. For normal functioning, this indicator should be more than 0.1; the enterprise only in 2018 corresponded to this indicator since it resorted to a long-term loan. The next indicator is the ratio of the provision of inventories with own circulating assets 1.35565; 1.628741; 1.391145, although the allowable rate is 0.6-0.8 since there should be no surplus stock in the warehouse but the lack of stock stops production. As can be seen from the coefficients in the enterprise of the simple inventory. Equity capital flexibility ratio: 3.97028; 1.923426; 3.898923 This ratio shows how mobile the organization's own sources of funds are from a financial point of view. The optimal level of ratio is 0.5. Now let's calculate the indicators characterizing the degree of financial independence, namely the autonomy ratio: 0.198664116; 0.456460462; 0.204729368. This ratio indicates the prospects for changes in the financial position in the near future. The optimal value of the coefficient is 0.6. It means that the amount of the company's funds is 60% of the sum of all sources of financing. The high level of the autonomy ratio reflects the stable financial position of the organization, the favourable structure of its financial sources and the low level of financial risk for creditors. This situation serves as a protection against significant losses during periods of depression and a guarantee of obtaining a loan for the organization itself. Another coefficient characterizing independence is the debt and equity ratio: 5.033621683; 2.190770248; 4.884497068. The coefficient shows what part of the organization's activities is financed from its own funds and what – from borrowed funds. The increase in the coefficient indicates the inadequacy of enterprises' sources of funds to cover their needs for working capital. It is generally accepted that if the ratio of borrowed and own funds is more than one, this indicates the enterprise's insolvency for this indicator. In addition to calculating these indicators, the bankruptcy forecast coefficient is very often calculated – it shows the share of net current assets in the value of all enterprise funds. It is also calculated as the ratio of the difference between current assets and short-term liabilities to the balance sheet total. A decrease in the indicator indicates that the company is experiencing financial difficulties. But there are other methods for calculating the risk of bankruptcy, such as the Altman model. For the first time, Altman's Z-model, for companies whose shares are listed on the stock exchange, was published in the work of E. Altman, "Financial ratios, discriminant analysis and corporate bankruptcy forecast" in 1968. Altman's 1968 model included financial data from 66 enterprises, half of which went bankrupt, and the other half continued to operate successfully. In 1983, E. Altman's article "The Difficulties of Corporate Finance" published a model for enterprises whose shares are not listed on the stock exchange. In 1993, E. Altman, in his book "The Difficulties of Corporate Finance and Bankruptcy", provided his model for non-manufacturing companies. In 2003, Altman's article "Credit Risk Management: The Challenge for the New Millennium" was published, describing Altman's model for emerging markets. In 2007, E. Altman and D. Sabato, in their article "Modeling Credit Risk for SMEs: US Market Data", presented a logit model developed based on a sample of 120 bankrupts and 2010 non-bankrupts in the United States. Altman's Z-model is constructed using the Multiple-discriminant analysis apparatus. In general, the formula for obtaining the scoring value looks like a regular polynomial:

$$Z = A1X1 + A2X2 + \dots + AnXn$$

The original Z-score formula was as follows:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5.$$

X_1 = working capital / total assets. Measures liquid assets concerning the size of the company.

X_2 = retained earnings / total assets. Measures profitability that reflects the company's age and earning power.

X_3 = earnings before interest and taxes / total assets. Measures operating efficiency apart from tax and leveraging factors. It recognizes operating earnings as being important to long-term viability.

X_4 = market value of equity/book value of total liabilities. Adds market dimension that can show up security price fluctuation as a possible red flag.

X_5 = sales / total assets. The standard measure for total asset turnover (varies significantly from industry to industry) [8].

As a result of the calculations, it was found that all firms with a Z-score greater than 2.99 are "stable", and firms with a Z-score less than 1.81 are bankrupt. Thus, the "zone of ignorance" or "error zone" is in the interval [1.81; 2.99]. Based on further calculations, the middle point or optimal cut-off point equal to 2.675 was derived, and the classification rule, which states: the higher the value of the Z-score, the lower the risk of bankruptcy: $Z < 1.8$ – a high probability of bankruptcy;

$Z = (1.81-2.7)$ - the average probability of bankruptcy;

$Z = (2.71-2.9)$ - bankruptcy is possible;

$Z > 2.9$ - the probability of bankruptcy is small; a relatively stable financial position characterizes the company. However, with all the advantages of this model, it should be noted that the developed models for predicting bankruptcy are based on studying the behavior of firms in the conditions of Western development, which does not correspond to the conditions of economic development in Central Asia.

4 Discussion

The construction of such models for the domestic economy is problematic due to the regulatory framework imperfection for enterprises bankruptcy and the considerable lack of many factors affecting the financial stability of enterprises. Also, along with the professionalism and intuition of an analyst researching an enterprise, the quality of financial reporting documents and the formativeness degree of statistical data and coefficients on which the models are based play a significant role. Having calculated the indicators according to the Altman model, we get the following: for 2017 -2.282828021, this suggests that the likelihood that the company is on the verge of bankruptcy is high.

For 2018 - 2.831916926, the situation has improved; for 2019 2.356241296, the enterprise returned to the average probability of bankruptcy. It is often said that the weights and threshold values of indicators in the Altman model are calculated based on American analytical data from the 1960s and 70s. Therefore they do not correspond to the specifics of the modern economy [9]. It can be noted that this model is not the only one for calculating the risk of bankruptcy and, accordingly, it can be calculated using several models to provide more reliable information. Model O.P. Zaitseva in this model considers the loss ratio, the ratio of accounts payable and receivable, the ratio of short-term liabilities and the most liquid assets; unprofitable sales of products, the ratio of equity and debt capital; asset utilization factor. The advantages of this method are the simplicity and clarity of the construction of this model. But the weight coefficients are not entirely justified since they are determined without considering the correction for the relative value of the values of the individual coefficients. Model W. Beaver in this model involves indicators such as return on assets, the share of borrowed funds in liabilities, current

liquidity ratio, the share of net working capital in assets, Beaver's ratio. This model gives the maximum possibility of predicting bankruptcy over a time interval of up to 5 years, but the values of the factors differ significantly due to the peculiarities of the economies of different countries. Therefore, the mechanical use of the model leads to significant deviations of the forecast from reality [10].

5 Conclusion

The analysis of financial stability showed that the value of the surplus and the lack of the total value of the main sources of the formation of stocks of costs is a negative value, which indicates the unstable financial condition of the enterprise. The calculated autonomy coefficient values for the business were lower than the usual value, indicating that the business is unattractive to investors and creditors. The found values of the coefficient of independence indicate that most of the enterprise's assets in various property of financial assets are formed by attracting borrowed funds. Also, calculations based on Altman's indicators show the tendency of the enterprise to bankrupt, but it is necessary to take into account the factors that this model may not accurately reflect the situation due to the differences in the economies of Western countries and Asian countries. Nevertheless, the enterprise must revise the production plan given the limited material resources.

List of References

1. V. V. Alsevich. Introduction to mathematical economics, **2** (2007)
2. S. A. Aristov. Imitation modelling of economic processes, **13** (2003)
3. O. I. Volkov, O. V. Devyatkin. Economy of the enterprise, **34** (2008)
4. T. Sh. Shagiyasov, Z. A. Sagdillaeva. "Financial and management analysis, **56** (2004)
5. A. F. Purtova. Young scientist, **15** (2014)
6. A. D. Sheremet. Complex analysis of economic activity, **23** (2009)
7. T. Sh. Shagiyasov, Z. A. Sagdillaeva. "Financial and management analysis **13** (2004)
8. M. S. Krass, B. P. Chuprynov. Mathematics in economics, **12** (2007)
9. L. I. Zhurova, A. Yu. Shekhtman. Bankruptcy of enterprises, **23** (2014)
10. L. I. Zhurova, A. Yu. Shekhtman. Bankruptcy of enterprises, **12** (2011)