

MODERN APPROACHES CREDITWORTHINESS

VALUATION OF BUSINESS ENTITY

MAVLANOV NORMUMIN NORMAMATOVICH
ABDULLAYEV ABROR BOZARBOYEVICH
KALANDAROVA NARGIZA NARIMANOVNA
OCHILOV OLMOS IKROM UGLI¹

Abstract---In the article methods of evaluating and analyzing creditworthiness of entities have been discussed. Current order of creditworthiness and its improvement in case of Uzbekistan have been accomplished. Adopting of complex analysis in credit scoring model of creditworthiness valuation and its advantages have been proved in case of JV “UZGERMED PHARM” LLC. Theoretical and practical proposals on solving current shortcomings of evaluating creditworthiness by developing complex analysis have been described.

Keywords---Credit, credit return risk, creditworthiness, liquidity, balance liquidity, financial stability, financial indicators, scoring model, bankruptcy, Altman model.

I. INTRODUCTION

The reforms which are being implemented in our republic are considered to be one of the important factors in the development of the national economy. In particular, extensive reforms carried out in all sectors of the economy have created a basis for sustainable development in the future. The adoption of laws, decrees and resolutions aimed on further improvement of the banking system which is the locomotive of our economy, is a practical expression of the current development of this sphere.

Nowadays, comprehensive reforms are being implemented in our

¹Mavlanov Normumin Normamatovich, PhD in economics, Tashkent Institute of Finance.
Abdullayev Abror Bozarboyevich, PhD in economics, Tashkent Institute of Finance.
Kalandarova Nargiza Narimanovna, PhD in economics, Tashkent Institute of Finance.
Ochilov Olmos Ikrom ugli, doctoral student of Tashkent Institute of Finance.

country in compliance with the “Action Strategy for the five main priorities of the development of the Republic of Uzbekistan for 2017-2021” approved by the Decree of the President of the Republic of Uzbekistan PD №4947 as of February 7, 2017. In particular, the strategy focuses on “reforming the banking system, enhancing the capitalization of the banks’ deposit base and strengthening its financial stability and reliability, further promoting investment projects and lending to small businesses and entrepreneurship” in priority areas of the economic development and liberalization.

It is fact that banks play an important role in the development of national economy in Uzbekistan. Numbers of credits provided by commercial banks have a significant place in GDP of Uzbekistan.

Table 1: Credits provided by commercial banks of the Republic of Uzbekistan and their share in GDP²
 (billion soums)

By currency type	2017 year	2018 year	2019 year
In national currency	36090,7	66 695,5	80 406,7
In foreign currency	13449,8	33 962,6	60 355,7
Total	49540,5	100 658,2	140 762,4
GDP	302 536,8	406 648,5	511 838,1
Share of credits in GDP, %	16,4	24,8	27,5

The table shows that loans from commercial banks have been growing rapidly in recent years. In addition, the largest part of the banking business is related to lending activities, and therefore they carry the highest risk. To reduce the risk in process of lending banks have to assess the credit risk to which they are being exposed. Credit risk assessment of companies is based on an analysis of their financial statements and other nonfinancial indicators. By analyzing the financial statements, bank receive core information about

²Prepared on the basis of www.cbu.uz(website of the Central Bank of the Republic of Uzbekistan) and www.stat.uz(website of the State Statistics Committee of the Republic of Uzbekistan).

company's financial position, cash flows, changes in equity and results of yield of the company in a defined period. On the basis of relevant indicators of financial analysis banks estimate future financial value of a company which will influence its ability to repay a loan. The aim of the study is to show the methodology of evaluating creditworthiness of business units.

II. MATERIALS AND METHODS

Different authors expressed various opinions on the research topic. The theoretical issues of the analysis and assessment of the creditworthiness of enterprises have been revealed in scientific papers of Yendovitskiy and Bocharova (2005), analysis of the creditworthiness of enterprises has been considered by Yendovitskiy and others (2016), assessment of the borrower's creditworthiness has been investigated by Naumchenkova (2016), financial analysis of the enterprise has been researched by Liferenko (2005). In addition, the issues related to the research topic have been considered by domestic scientists – economists in such scientific works as “Banking” by Abdullayeva (2017), “Banking” (Azizov and other, 2016), analysis of the financial condition of the economic entities – by Rakhimov (2015), and ways of improving the practice of assessment of the creditworthiness of commercial banks' customers have been investigated by Mamatov and others (2016). All above-mentioned scientific papers are devoted to the overall consideration of the research topic with the account of domestic practice and foreign experience; however, they do not provide any practical solution to this problem. Alimardanov (2017) in his scientific article proposes the ways to improve the practice of assessing creditworthiness of small businesses, in particular, the method of 8 coefficients. The coefficient method mainly evaluates financial aspects of the company. This method assesses creditworthiness on the basis of the indicators for the past period; however, loans are extended for the future period.

Creditworthiness is determined by a huge number of factors, and each of the factors must be studied. If we talk about creditworthiness in the future, then its assessment in this context is a rather difficult task. And furthermore, it is necessary to analyze the changes in all circumstances that affect creditworthiness. Hence follows the purpose of analyzing the creditworthiness of an economic entity, which involves a comprehensive study of the borrower's activities in order to provide a consistent assessment of the borrower's ability to return the credit resources granted to him.

A particular difficulty is directly obtaining fair, verified and objective results of an assessment of the creditworthiness of business venture. This problem is solved by using system and complex methods to the analysis of concrete enterprise—the borrower. When using complex economic analysis, the most important peculiarities of the business unit's activity are taken into account, such as the study of all aspects of the enterprise's activities and a detailed assessment of the relationship between the analysis sections.

Currently, there are many different approaches to assessing creditworthiness. Professor I.V. Vishnyakov proposed a successful classification of creditworthiness models. This classification is described in the following figure. It is noted that approaches to assessing creditworthiness are divided into two types - classification and complex models.

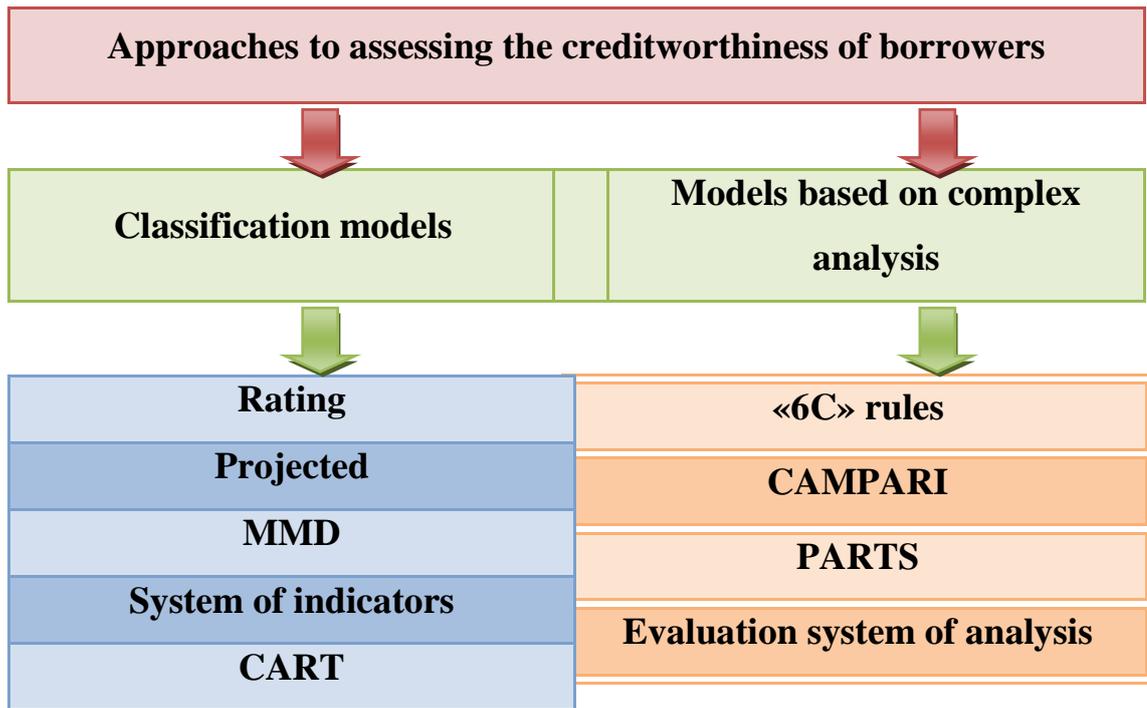


Figure 1. Classification of evaluating creditworthiness of borrower models by professor I.V.Vishnyakov.

Classification approach makes it possible to differentiate borrowers. As part of this approach, there are different models: rating models, which make the borrowers group by categories; projected models, which allow the ranking of borrowers by the possibility of bankruptcy; MMD – Models of multiple discriminant analysis, which is used for forecasting bankruptcy; CART models, which take into account the financial ratios.

The problem of the approaches to evaluate creditworthiness is that they focus on statistical assessments, rather than estimates calculated for future periods, while the bank must make a credit decision, the results of which can only be estimated in the future.

Making a prediction based on only formalized approaches to analysis is impossible. Therefore, it will be more effective to use mathematical tools in combination with expert assessment. The first stage of the financial analysis, which uses a formalized valuation approach, is coefficient method. The second stage of assessment is carried out directly on the scoring model, which allows using expert evaluation.

This research is focused on the measures aimed at improving analysis of creditworthiness of companies. Such research methods as comparative analysis of the practical data, statistic tables and other relevant data have been widely used in the research. Basing on the research results appropriate proposals and recommendations have been developed.

III. RESULT AND DISCUSSION

Credit scoring is a kind of rating assessment, a technical technique proposed in the early 40s of the twentieth century by the American scientist D.Duran for the selection of borrowers on a consumer loan. The difference between credit scoring from rating evaluation is that in the formula of rating assessment, private score is used instead of the value of the indicator. The model of credit scoring was originally focused on borrowers—individuals. After the effectiveness of credit scoring in consumer crediting had been proved, the model began to be applied to assess the creditworthiness of legal entities.

This scoring model combines an assessment of credit risk, business risk and credit history risk.

The main purpose of using the scoring model is to increase awareness of the real financial and economic situation of potential borrowers. The model not only allows assessing actual financial condition, but also the credit potential of enterprises that meet the requirements for lending to borrowers. An important difference between the credit scoring model and the subjective evaluation of the expert is that the scoring estimates are based on the mathematical and statistical analysis of the credit history of the "past" borrowers of the bank and assume a more objective risk assessment system.

Let us consider the procedure for assessing the creditworthiness of economic entities in a case of JV "UZGERMED PHARM" LLC, which is one of the huge credit borrowers of JSCB "Uzpromstroybank". The ability of repaying received loans of entity is timely and fully characterized by a

coverage ratio.

1. Coverage ratio (C_r). This ratio shows not only the degree of debt repayment for the short-term or long-term perspective, but also permanent assessment of business activity.

$$C_r = CA(390) - EFP(190) - DE(200) - OAR(211) / TL (600)[6] = 3384222,1 / 992479,1 = 3,4$$

CA-current assets, EFP-expenses for the future period, DE-deferred expenses, OAR-overdue accounts receivable, TL- total liabilities.

2. Liquidity ratio (L_r)

$$L_r = C(320) + SHTI(370) + R(210) - OAR(211) / TO(600) = (811635,5 + 571897,6) / 992479,1 = 1,4$$

C—cash, SHTI—short-term investments, R-receivables, OAR—overdue accounts receivable.

3. Provision with own funds (autonomy ratio).

$$A_r = EC (480) / TA (780) = 5486107 / 13197682,7 = 0,42$$

EC-equity capital, TA-total assets

This ratio indicates the prospects for a change in the financial situation in the near future. The high level of the autonomy ratio reflects the stable

financial position of the organization, the favorable structure of its financial sources and the low level of financial risk for creditors. This situation serves as protection from large losses during periods of depression and guaranteeing a loan for the enterprise itself.

4. Presence of own circulating assets (POCA).

$$POCA = \text{Equitycapital (EC)} + \text{Long term credits and loans (LTCL)} - \text{Long-term assets (LTA)} = 5486107 + 5067619,6 - 9813460,6 = 740266$$

The essence of this indicator is that the availability of its own circulating assets provides the necessary conditions for the implementation of the economic activities of the enterprise: purchase of inventory, obtaining loans from the bank and expanding the volume of sale.

The current system for assessing the creditworthiness of enterprises does not provide an opportunity to assess the financial condition of the enterprise in the short term, since the current order is aimed at studying three indicators: current, intermediate and general solvency. These indicators do not impart qualitative assessment financial position of entity.

In our point of view, it is appropriate and important to use complex analysis in evaluating creditworthiness by banks in order to implement the tasks of DP-2344 from 6th may, 2015 and minimizing credit return risks. The main criteria for complex analysis when evaluating creditworthiness are the followings:

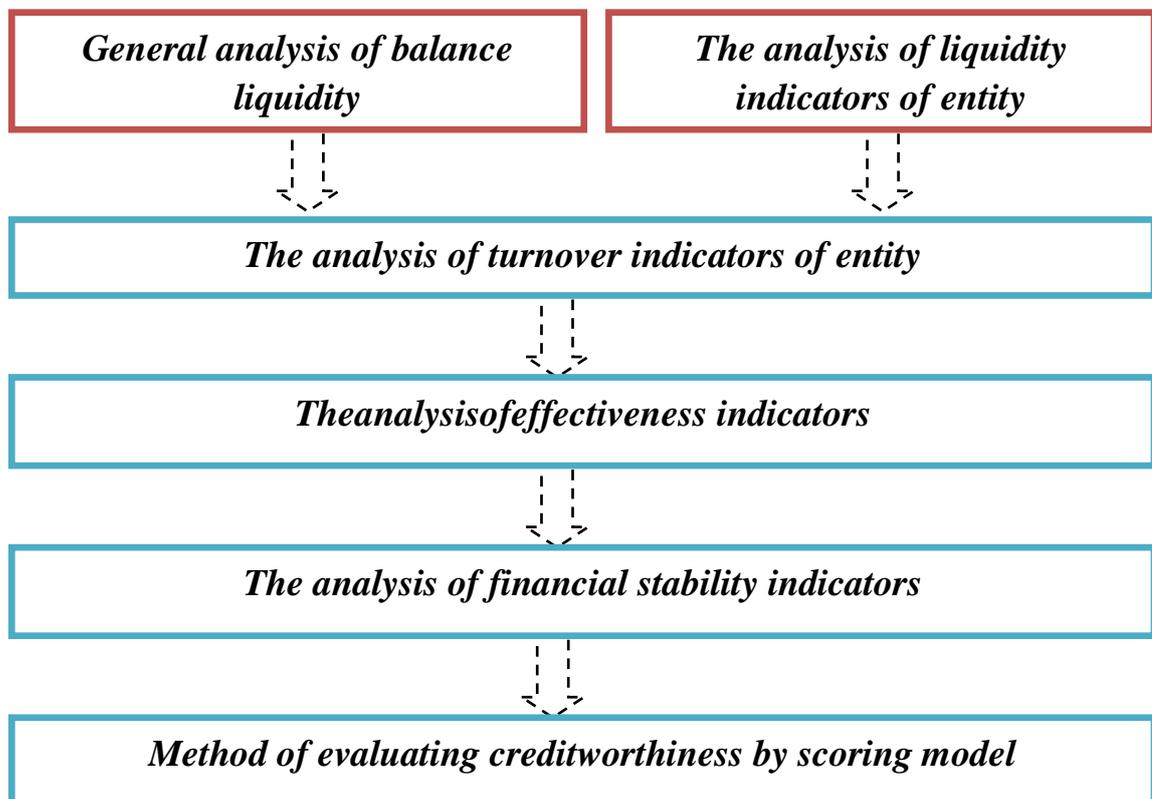


Figure 2. Principal criterion of complex analysis on evaluating creditworthiness.

The main stage of evaluating creditworthiness of entity is balance liquidity analysis. Balance liquidity indicates coverage level of variety liabilities by available assets. To determine liquidity degree assets, equity and liabilities are classified in groups (see table 2).

Table-2: Classification of assets, equity capital and liabilities for determining balance liquidity³

Assets			Equity and liabilities		
A₁	High liquidity assets 811635,5	Expresses maximal rate of realization: cash and short term investments	P₁	Most urgent liabilities 410744,0	Highly coverage of payables
A₂	Fast sold assets 571897,6	Expresses high rate of realization: receivables till 12 months.	P₂	Short-term liabilities 581735,1	Short-term liabilities and credits
A₃	Slowly sold assets 2000689,0	Receivables > 12 months, inventory	P₃	Long-term liabilities 6719096,6	Long-term loans and bank credits
A₄	Hard sold assets 9813460,6	Long term assets	P₄	Fixed passives (equity capital) 5486107,0	Sources of own funds

Balance is liquidity under the following conditions:

$$A_1 > P_1; A_2 > P_2; A_3 > P_3; A_4 < P_4$$

According to the table 2, in JV "UZGERMED PHARM" LLC the balance liquidity of the enterprise is in an unstable state. The liquidity balance sheet shows the extent to which the obligations of the enterprise are repaid at the expense of payment means. Balance liquidity ensures an evaluation of the composition of assets and liabilities of the balance sheet. Further we will consider and analyze liquidity ratios: current liquidity ratio, quick liquidity ratio and cash liquidity ratio.

Activity indicators or turnover ratio are measure of success in managing company's assets. They show circulation speed of assets in business process.

In the practice of evaluating creditworthiness the following ratios are used:

- Current asset turnover ratio;
- Accounts receivable turnover;

³ Source: Financial statements of JV "UZGERMED PHARM" LLC for 2019 year.

- Accounts payable turnover ratio;
- Inventory turnover ratio.

Table-3: Procedure of settlements of liquidity indicators⁴

Procedure of settlements	Definition	Allowable norms
$R_{cl} = \frac{A_1 + A_2 + A_3}{P_1 + P_2} = \frac{3384222,1}{992479,1} = 3,4[5]$	Current ratio shows company's ability to service current liabilities with available current assets.	$R_{cl} > 2$
$R_{ql} = \frac{A_1 + A_2}{P_1 + P_2} = \frac{1383533,1}{992479,1} = 1,4$	Quick ratio is expressed by observing relation between current assets minus inventory, and current liabilities.	$R_{ql} > 0,7$
$R_c = \frac{A_1}{P_1 + P_2} = \frac{811635,5}{992479,1} = 0,82$	<i>Cash ratio</i> shows the coverage of current liabilities with cash.	$R_c > 0,2$

Current asset turnover ratio shows how many times current assets of the company are turned over in a year. This ratio measures efficiency with which a company uses current assets to make a profit within a business cycle.

$$R_{ca} = \frac{\text{Sales (010 line form-2)}}{\text{average current assets } (A_{by} + A_{ey})/2; \text{ form-1,390 line}} = \frac{4481736,4}{12728872,5} = 0,35[5]$$

Account receivable turnover shows how many monetary units of sale can be achieved with a sum invested in account receivables. It is calculated in the following way:

$$R_{ar} = \frac{\text{Sales (010 line form-2)}}{\text{average accounts receivable } (R_{by} + R_{ey})/2} = \frac{4481736,4}{1417590,6} = 3,16$$

Account payable turnover ratio shows in how many days on average a company is paying its suppliers, i.e. how many days are between moment of

⁴Source: Financial statements of JV "UZGERMED PHARM" LLC for 2019 year.

purchase and moment of paying the suppliers. It is calculated in the following way:

$$R_{ap} = \text{Sales (010 lineform-2)} / \text{average accounts payable} (P_{by} + P_{ey} / 2) = 4481736,4 / 390837,3 = 11,47$$

Inventory turnover ratio shows efficiency in using and managing total supplies, which has the influence on increase in company's profit. It is calculated in the following way:

$$R_{inv} = \text{Sales (010 lineform-2)} / \text{average value of inventory} (I_{by} + I_{ey} / 2) = 4481736,4 / 1721493,6 = 2,6$$

Evaluating method of creditworthiness by scoring model.

Bankruptcy probability of entity is evaluated by scoring model.

Determination of creditworthiness of investigating entity is calculated in the following way by E. Altman model:

$$Z(A) = 1,2 * K_1 + 1,4 * K_2 + 3,3 * K_3 + 0,6 * K_4 + K_5 = 1,2 * 0,056 + 1,4 * 0,017 + 3,3 * 0,049 + 0,6 * 0 + 0,34 = 0,0672 + 0,0238 + 0,01617 + 0 + 0,34 = 0,445 [14]$$

Hereafter:

Z – complex indicator of creditworthiness level of entity.;

K_1 – source of own turnover assets ((480+490-130) lineform-1)/total assets (400 line, form-1) = $740266,0 / 13197682,7 = 0,056$

K_2 – net profit (270 line, form-2) / total assets (400 line, form-1) = $222662,0 / 13197682,7 = 0,017$

K_3 – pretax profit (240 line, form-2) + expenses on percentages (180 line, form-2) / total assets (400 line, form-1) = $(255940,3 + 394681,0) / 13197682,7 = 0,049$

K_4 – market value of shares / borrowed capital (770 line, form-1) = 0

K_5 – Sales (010 lineform-2) / total assets (400 line, form-1) = $4481736,4 / 13197682,7 = 0,34$

The consistency of the calculation of the level of creditworthiness and the level of risk of bankruptcy is shown.

Table-4: Creditworthiness evaluation by Altman model [14]

Altman indicator (Z)	Creditworthiness of entity	Risk of bankruptcy
1,8 <	Extremely low	Extremely low
от 1,81–2,7	Low	Low
от 2,8–2,9	Moderate	Moderate
> 2,99	High	High

According to Table-4, it is clear that the level of the complex creditworthiness indicator of the enterprise, JV LLC "UZGERMED PHARM" was 0.445 points, which indicates too low level of creditworthiness and a very high risk of bankruptcy of the enterprise. We will perform a comparative analysis of the complex analysis with the current order of assessing the creditworthiness of an enterprise (see table-5).

Table-5 Comparative characteristics of the assessment of the creditworthiness of an enterprise on the basis of a comprehensive analysis with the current order

№	Current order	Result	Complex analysis	Result
1	Coverage ratio	Affirmative	Liquidity indicators of entity	
2	Liquidity ratio	Affirmative	Current liquidity ratio	Affirmative
3	Autonomy ratio	Affirmative	Quick liquidity ratio	Affirmative
4	Presence of own circulating assets(POCA)	Affirmative	Cash liquidity ratio	Affirmative
5			Balance liquidity analysis	Negative
6			Analysis of turnover of assets	
			Current assets turnover ratio	Negative
			Receivables turnover ratio	Affirmative
			Payables turnover ratio	Affirmative
			Inventory turnover ratio	Affirmative
7			Analysis of effectiveness indicators of entity	
			Current assets	Negative

			profitability indicators (CAPI)	
			Equity capital profitability indicators (ECPI)	Negative
			Sale profitability indicators (SPI)	Affirmative
8			Analysis of financial stability indicators	
			Autonomy ratio	Negative
			Equity capital to borrowed capital ratio	Negative
			Maneuverability of equity capital ratio	Negative
9			Method for assessing creditworthiness by scoring model	Negative

According to the current procedure for assessing creditworthiness, it can be seen that all the indicators of JV "UZGERMED PHARM" LLC are positive and the enterprise is creditworthy. However, according to the recommended method of complex analysis, separate indicators of creditworthiness are in a negative characterization. Summarizing the above results, we came to the conclusion that complex analysis ensures full and timely return of credit resources.

IV. CONCLUSION

In conclusion, it should be noted that current order of creditworthiness evaluation in national commercial banks is not incompatible with foreign practice and has many shortcomings. First, creditworthiness of business venture is being evaluated with four indicators. Second, there is no scientifically based model of creditworthiness in the practice of commercial banks. Third, performance indicators, financial stability indicators are not taking in account while assessing creditworthiness of entity.

Complex analysis of creditworthiness using credit scoring model is much more reliable than current practice and provides minimizing credit return risks in commercial banks. One of the advantages of proposing method

is taking account different indicators of entity and covering almost all types of financial statements.

Scoring model of evaluating creditworthiness using complex analysis allows to accurately assessing creditworthiness of borrowers and makes credit return risks minimize.

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