

**ALFRED NOBEL UNIVERSITY  
DEPARTMENT OF THE GLOBAL ECONOMICS**

**Master's Thesis**

**ASSESSMENT OF THE BANK BORROWER'S  
CREDITWORTHINESS**

Student: Ostapenko A.R.

Group: EP-19 VM

Specialty: 051 Economics

Supervisor: Koshulko O.P., Ph.D. in Economic Sciences, Associate Professor

**Dnipro**

**2021**

**ALFRED NOBEL UNIVERSITY  
DEPARTMENT OF THE GLOBAL ECONOMICS**

Master level  
Specialty 051 Economics

Approved by:  
Head of the Department of Global  
Economy  
Zadoia O.O., Ph.D. in Economics Sciences, Full  
Professor  
(signature, last name, initials, scientific degree, academic status)

“ \_\_\_ ” \_\_\_\_\_ 20\_\_ p.

## The Master's Thesis Assignment

Ostapenko Arsen Romanovich

Student's full name

1. Title Assessment of the bank borrower's creditworthiness

2. Supervisor Koshulko O.P., Ph.D. in Economic Sciences, Associate Professor

(last name, initials, scientific degree, academic status)

Approved with the Order of « \_\_\_ ” \_\_\_\_\_ 20\_\_ , No. \_\_\_\_\_

3. Deadline for submission \_\_\_\_\_

4. Aim of the paper - generalization and enlightenment of theoretical and methodological principles of creditworthiness assessment modelling and practical application of existing methods of bank borrower's creditworthiness assessment

5. Thesis outline (list of issues to be developed):

INTRODUCTION: assessment of the current state of the problem, reference to leading scientists and specialists in this field, identification of existing gaps in this area, relevance of the topic, purpose and objectives, object and subject, research methods, structure of the work.

CHAPTER 1. THEORETICAL ASPECTS OF ASSESSING THE CREDITWORTHINESS OF BANK BORROWERS

- 1.1 The concept, necessity and mechanism for assessing the creditworthiness of the borrower.
- 1.2 Characteristics of modern methods of assessing the creditworthiness of the borrower
- 1.3 Creditworthiness as the basis of the credit process and minimization of credit risk

CHAPTER 2. PRACTICAL ASPECTS OF ASSESSING THE BORROWER'S CREDIT CAPACITY ON THE EXAMPLE OF THE COMMERCIAL BANK JSC "PROCREDIT BANK"

- 2.1 General characteristic of JSC «ProCredit Bank»
- 2.2 Characteristics of the process of credit analysis of the borrower – a legal entity
- 2.3 The risk classification system as a crucial instrument for supporting the credit assessment

CHAPTER 3. PROBLEM ASPECTS OF ASSESSING THE CREDITWORTHINESS OF BORROWERS AND WAYS OF ITS IMPROVEMENT

6. Date of issue of the assignment 19.09.2020

7. Thesis schedule

no	Stages	The deadline for submission	
		Schedule date	Actual date
1	Chapter 1	01.11.2020	
2	Chapter 2	25.11.2020	
3	Chapter 3	20.12.2020	
4	The whole paper	10.01.2021	

Student

\_\_\_\_\_ signature

Ostapenko A.R.

last name, initials

Supervisor

\_\_\_\_\_ signature

Koshulko O.P.

last name, initials

## ABSTRACT

*Ostapenko A.R. Assessment of the bank borrower's creditworthiness*

The purpose of this paper is to determine and evaluate the factors influencing creditworthiness assessment conducted by banks in Ukraine. The study was conducted using the existing system of ProCredit Bank's creditworthiness assessment system and the method of Internet-resources analysis. Based on the analysis of the approaches to assessing the risk of lending of financial institutions, it was identified the qualitative criteria that should be taken into account when assessing the potential borrower's creditworthiness, in particular: sectoral and regional risks, market position, management quality, business reputation of the enterprise. To justify the need to improve the creditworthiness assessment of financial institutions, the current state of non-performing loans by Ukrainian banks was considered.

**Keywords:** creditworthiness of the borrower, financial statement, financial analysis, creditworthiness assessment.

## АНОТАЦІЯ

*Остапенко А.Р. Оцінка кредитоспроможності позичальників банку*

Метою даної роботи є визначення та оцінка факторів, що впливають на оцінку кредитоспроможності, проведену банками в Україні. Дослідження проводилось на основі існуючої системи оцінки кредитоспроможності ПроКредит Банку та використанням методу аналізу ресурсів в Інтернеті. На основі аналізу підходів до оцінки кредитоспроможності фінансових установ було визначено якісні критерії, які слід враховувати при оцінці кредитоспроможності потенційного позичальника, зокрема: галузеві та регіональні ризики, ринкова позиція, якість управління, ділова репутація позичальника. Для обґрунтування необхідності удосконалення оцінки кредитоспроможності фінансових установ було розглянуто сучасний стан проблемної заборгованості за кредитами банків України.

**Ключові слова:** кредитоспроможність позичальника, фінансова звітність, фінансовий аналіз, оцінка кредитоспроможності.

## TABLE OF CONTENTS

<b>Topic. Assessment of the bank borrower’s creditworthiness</b>	
<b>The Master’s Thesis Assignment .....</b>	<b>1</b>
<b>ABSTRACT .....</b>	<b>1</b>
<b>INTRODUCTION .....</b>	<b>2</b>
<b>CHAPTER 1.....</b>	<b>5</b>
<b>THEORETICAL ASPECTS OF ASSESSING THE CREDITWORTHINESS OF BANK BORROWERS.....</b>	<b>5</b>
1.1. The concept, necessity and mechanism for assessing the creditworthiness of the borrower.	5
1.2. Characteristics of modern methods of assessing the creditworthiness of the borrower	9
1.3. Creditworthiness as the basis of the credit process and minimization of credit risk	17
<b>CHAPTER 2.....</b>	<b>26</b>
<b>PRACTICAL ASPECTS OF ASSESSING THE BORROWER’S CREDIT CAPACITY ON THE EXAMPLE OF THE COMMERCIAL BANK JSC “PROCREDIT BANK” .....</b>	<b>26</b>
2.1. General characteristic of JSC «ProCredit Bank»	26
2.2. Characteristics of the process of credit analysis of the borrower – a legal entity	33
2.3. The risk classification system as a crucial instrument for supporting the credit assessment	47
<b>CHAPTER 3.....</b>	<b>62</b>
<b>PROBLEM ASPECTS OF ASSESSING THE CREDITWORTHINESS OF BORROWERS AND WAYS OF ITS IMPROVEMENT.....</b>	<b>62</b>
<b>CONCLUSIONS AND PROPOSALS .....</b>	<b>67</b>
<b>APPENDICES.....</b>	<b>69</b>
<b>APPENDIX A “EXCLUSION LIST” .....</b>	<b>69</b>
<b>APPENDIX B “BALANCE SHEET STATEMENT” AS OF 2019 .....</b>	<b>70</b>
<b>APPENDIX C “PROFIT AND LOSS STATEMENT” FOR 2019.....</b>	<b>71</b>
<b>APPENDIX D “CLASSIFICATION OF ECONOMIC SECTORS BY ENVIRONMENTAL RISK” .....</b>	<b>72</b>
<b>REFERENCES .....</b>	<b>73</b>

## INTRODUCTION

Topic relevance. Banks are essential for each country's economy since no growth can be achieved unless savings are efficiently channeled into investment. Hence, this sector plays a vital role in the well-being of the economy. A weak banking sector not only jeopardizes the long-term sustainability of an economy, it can also be a trigger for a financial crisis which can lead to economic crises. Generally, the relationship between financial development and economic growth has been widely discussed in the literature since the seminal Schumpeter's work (Schumpeter, 1911). And its development primarily depends upon the growth of the loan portfolio of both individuals and legal entities. This is due to the fact that in modern realities, loan granting to the real sector of the economy promotes sustainable economic growth, an inflow of investments, raise the range of products available for consumers and production capacity. Equally, important for the economic development of the country is the strengthening of positions in the field of consumer lending, as the stability of the economy at the domestic level is supported by stable domestic consumer demand, which generally affects inflation, GDP growth, consumer price index, volume of sales of goods, etc. Thus, there is a question of adequate assessment of the creditworthiness of a potential borrower.

Taking into consideration the current state of Ukraine's economy, the financial situation of many domestic enterprises and numerous problem loans, Ukrainian banks are forced to constantly improve the strategy and tactics of their lending activities. To reduce the risk when lending banks have to assess the credit risk to which they are being exposed. Among the tools for minimizing risk in the bank's lending activities, the assessment of creditworthiness of borrowers occupies a prominent place. The conclusion and the way of collaborating with such clients are based on the results of the creditworthiness analysis, which allow avoiding unjustified risks when conducting credit operations. Thus, the creditworthiness of the borrower has always been and remains one of the main criteria for determining

the feasibility and worthwhileness of establishing a credit relationship with the client.

But the high level of non-performing loans observed in the banking sector of Ukraine is about 80% as of 2014, and 45.5% according to the National Bank of Ukraine as of 01.09.2020, indicates the imperfection of borrowers' assessment creditworthiness processes. Therefore, the urgency of researching and improvement of modern methods of assessing the borrowers' creditworthiness is remaining a live issue today.

The literature review. The issue of borrowers' creditworthiness evaluation was studied by the following domestic academic economists: V.V Vitlinsky, V.V Galasyuk, I.S Gutsal, O.V Dzyublyuk, A.O. Epifanov, N.E Krupskaya, A.M Moroz, S.V Naumenkova, M.I Savluk, Y.I. Tchaikovsky and many others. Among foreign scientists the works of E. Brigham, L. Gapensky, V.O Lee, V.V Ten, G.S Panova should be mentioned. However, the problem cannot be considered sufficiently studied heretofore, because there is no single approach to defining the system indicators that would comprehensively characterize creditworthiness of borrowers.

Research goal and objectives. The purpose of the master's thesis is a theoretical justification, development of guidelines, and practical recommendations for assessing the creditworthiness of borrowers as a prerequisite for reducing the credit risk of the bank. To achieve this goal, the following tasks were solved:

- determination of the nature and components of the borrower's creditworthiness;
- consideration of the signs of creditworthiness and methodological approaches to its assessment;
- substantiation of the feasibility of using integrated indicators to assess the creditworthiness of borrowers;
- investigation of the features of modeling the level of credit risk;
- identifying and systematizing the main problematic aspects in the system of assessing the creditworthiness of the borrower, which arise both at the level

of individual banking institutions and at the national level of the central regulator of the domestic banking system;

- formulation of areas for minimizing the level of the credit risk of the bank, due to the improvement of methods of assessing the creditworthiness of the borrower.

Object of research. The process of the borrower's creditworthiness assessment.

Subject of research. Theoretical, scientific, methodological and practical aspects of assessing the creditworthiness of the borrower in the context of minimizing credit risk of the bank.

The methods. The following methods were used in the research: general scientific methods of analysis and synthesis, induction and deduction – in the study of the theoretical foundations of assessing the creditworthiness of borrowers; economic and mathematical modeling – in the process of modeling the level of credit risk of the bank; logical generalization – at formulation of conclusions of work.

The practical significance. The material of this article can be used in university lectures and textbooks regarding banking, organization of lending by commercial banks, credit risk assessment in banking institutions and other disciplines. Furthermore, highlighted practical recommendations regarding the procedure of borrowers' creditworthiness assessment provided by ProCredit Bank should be taken to consideration by other banks when developing their own evaluation models. Rightly so, ProCredit Bank has one of the lowest non-performing loan indicator in amount of 4,4% among biggest banks regarding legal entities loan portfolio.

Approbation of the thesis. A part of the master's thesis dedicated to the assessment of the projects addressed at 3<sup>rd</sup> International Scientific Conference: «Structural transformation of Ukraine's economy at: macro-, meso-, and micro-levels» in University named after Alfred Nobel in 20 of December, 2019, specifically, «Investment attractiveness assessment of startups and development prospects» was presented (Dubinsky, 2019).

# CHAPTER 1

## THEORETICAL ASPECTS OF ASSESSING THE CREDITWORTHINESS OF BANK BORROWERS

### 1.1. The concept, necessity and mechanism for assessing the creditworthiness of the borrower

Contemporary trends in the development of the banking sphere are characterized by a significant variety of available services and operations designed to ensure high-quality and efficient access of individuals, enterprises and organizations to the financial market. In fact, the redistribution of these liquid resources through the process of bank lending, allows financial institutions to receive a vast share of their income. However, there is another unsettled question related to the selection of a quality mechanism for assessing the ability of borrowers of different levels in a timely manner and in full to repay the money received from banks.

The importance of this process is caused by the current situation of the national economy and banking system, which are in so-called pre-crisis expectation and some have not yet fully resolved the problems of the crisis processes of previous years, in particular the growth of bad debts and problems with the modernization of risk management in commercial banks. Therefore, the increasing of unresolved contradictions may lead to collapse and an economic downturn.

The creditworthiness of the borrower is typically seen as the borrower's certain prerequisites for obtaining a loan and his ability and desire to repay the loan and interest thereon in full and within the contractual period.

The creditworthiness of the enterprise is formed as a result of its economic activity and shows how effectively it manages its financial resources, rationally combines the use of own and borrowed funds, and handles investments.

Credit analysis is performed in order to obtain information to decide on the possibilities and conditions of the collaboration. The depth of analysis partially

depends on the presence or absence in the past credit relations of the bank with a specific borrower, from the results of its financial and economic activities, the amount and terms of the loan. In a market economy, the creditworthiness of the client-borrower is a basic characteristic that determines the possibility of establishing credit relations between the bank and the counterparty.

The assessment of the creditworthiness of the bank's customers should be based on certain conditions, which envisage its reliability by using all the necessary information data, determining a wide range of indicators that comprehensively characterize the activities of the borrower, which are applying for different types of loans.

Documentation package may consist of materials received directly from the borrower (company financial statements), extract from a credit bureau, contracts signed with customers and suppliers, credit facility agreements or lease agreement with other banks, other materials from government agencies and external auditors (industry research, statistical information, audit opinion, etc.).

When assessing the borrower's creditworthiness, commercial banks of Ukraine are guided by their own regulations and methods, which are based on the methodological recommendations of the National Bank of Ukraine. At the same time, the NBU does not prohibit banks from independently established additional criteria for analyzing the borrower's financial situation, which increases the minimum requirements needed for indicators in order to adequately assess credit risks and properly control them.

List of items of the borrower's creditworthiness and indicators that it is characterized by depends upon the purposes of the analysis, types of credit product, the state of the bank's credit relations with a particular client, the results of economic and financial activities of the latter, as well as the available collateral. Moreover, each bank develops its own evaluation system based on features of credit policy, technological capabilities, specialization of the bank, specific terms of the contract, priorities in work, market position, competitiveness, the level of economic and political stability in the country, etc (Dzyublyuk, 2003).

A variety of definitions of the borrower's creditworthiness and the complexity of its assessment is determined by a number of existing methods of analysis of the client's financial situation and its reliability in terms of timely repayment of bank debt. Different techniques differ from each other by the number of indicators used as a part of the borrower's rating formation, as well as different approaches to the characteristics and priority use for each of them (Vladymyrs'ka, 2013).

In general, the assessment mechanism of the creditworthiness of potential borrower – legal entity is composed of two main stages:

1. borrower's financial condition analysis;
2. analysis of qualitative indicators of the enterprise.

Banks use the financial statements of enterprises not only to determine the validity of the loan application in terms of the entity's need for additional cash but also taking into account the prospects of the borrower in the future, his profit and the probability of default of the loan. It is important to assess the borrower's ability to generate enough funds, both to repay the loan and to pay interest on it.

Analysis and evaluation of economic indicators of the enterprise is important and compulsory step in the analysis of creditworthiness of potential borrower. The system of economic indicators of the enterprise consists of the following main characteristics:

1. solvency;
2. financial stability of the borrower;
3. indicators of financial and economic activity;
4. analysis of cash flows of the borrower.

Methods of creditworthiness assessment used in practice by domestic banks according to a set of indicators characterizing financial condition the borrower contain a system of financial ratios (Vyhovks'ka & Simeonova, 2016).

The method-ratios are based on determining the liquidity ratios and their further analysis which can be carried out as follows:

- a) threshold comparison with established standards (normative method);

- b) comparison of the coefficients of a particular enterprise with similar ones in the same industry (comparative analysis);
- c) comparison of the coefficients of a particular enterprise with similar ones - leading in this field (benchmarking).

The method of coefficients is easy to use and does not require special information support, but has significant disadvantages:

1. Evaluation ratios provide the analyst with static information (as of a certain date) about the solvency of the enterprise and thus, the objectivity of the analysis decreases.
2. Inflation greatly distorts the balance sheet data, which also negatively affects the degree of objectivity of the analysis (Vyhovs'ka, 2016).

A daunting challenge is the development of quantitative standards for comparison because in reality there is a scatter of values due to the industry affiliation, and given in the economic literature the preferable values of financial ratios (financial stability, liquidity, etc.) do not take into account the industry characteristics and specifics of enterprises. This means that the results of such an analysis as of balance date can only give the lender an assessment of the general trend of development of a potential borrower, based on the dynamics of a number of financial indicators. Due to the lack of a single regulatory framework, a real assessment of the financial condition of the enterprise is impossible, because there are no comparable indicators: the average industry, the minimum allowable and the best for a particular industry.

Therefore, the result of the analysis of the borrower's creditworthiness should be the determination of the creditworthiness class. Today there is no single classifier of creditworthiness and reliability enterprises. In developed countries, there are ratings of financial condition, reliability and creditworthiness of companies, which are periodically published and give the lender an opportunity to properly assess their risk when issuing a loan (Vyhovs'kyy, 2012).

## 1.2. Characteristics of modern methods of assessing the creditworthiness of the borrower

The assessment of the creditworthiness of any borrower, regardless the status or the impact on the economy, is to develop a sequence of evaluation, build a logical scheme of the credit process, and select and use a set of criteria that could characterize the potential customer in a timely and complete manner to settle its credit obligations. It is clear that the list of such indicators may vary depending on the type of client, its industry or regional affiliation, as well as selected by each commercial bank, individually, methods of assessing creditworthiness (statistical, rating or scoring models). In this case, the greatest emphasis is on the selection of more or less stable components and the formation of sequential flowcharts, which allow you to follow the phased decision on the loan application made, moreover each of them provides some information that calculates certain components that eventually will formulate creditworthiness assessment, and ultimately form a generalized decision on the possibility of issuing a loan to the client. In fact, the structure of the borrower's credit rating system is quite ambiguous in its content and selection of components that depend on the overall level of development and progress of the banking system in the country, lending culture, the formation of national traditions of lending practices, etc.

At the same time, it was essential to recall that the versatility and different levels of scale, which may cover the process of assessing creditworthiness for different types of borrowers: legal entities and individuals. In general, the sequence of stages and the set of elements remains the same, but their number, content, qualitative and quantitative expression, lending volumes, and valuation methods change. In some cases, quantitative indicators will be more important, while in another – qualitative. According to some sources, integrated calculations, using a significant set of financial, economic and communication and marketing criterion that characterize market positioning and the success of relations with business partners, gain popularity (Dzyublyuk, 2003).

Hence, the analysis of existing theoretical and methodological practices allows us to conclude that the system of assessing the creditworthiness of the borrower as a whole should include:

- 1) the availability of a clear algorithm for the task, meaning from the initial stage, which involves direct communication with potential applicants and systemization of incoming information flows, and to the final, which envisages the issuance or refusal of a loan;
- 2) a set of methodological techniques for assessing the creditworthiness of the borrower;
- 3) determination of basic criteria (indicators) for assessing the borrower's creditworthiness;
- 4) the availability of complementary and mutually correcting indicators, which is meant to be a system's response to unpredictable factors that may affect the efficiency and reliability of the process of assessing the client's ability to repay loans;
- 5) availability of data protection system and software and technological support for the functioning of the credit rating system, etc.

There is might be a lot of components that characterize the company and may vary depending upon the modification of valuation systems in different banks, changes in regulations and legal acts of the national regulator, which is also reflected in the structural and logical reflection of this mechanism. For instance, the industry-zonal principle of assessing the creditworthiness of legal entities is gaining popularity today. Whereas individuals, on the contrary, are evaluated by referring the borrower to certain classes, ranks. In Figure 1.1 a schematic representation of the typical structure of the credit rating system for different groups of borrowers is represented (Zinchenko, 2013)

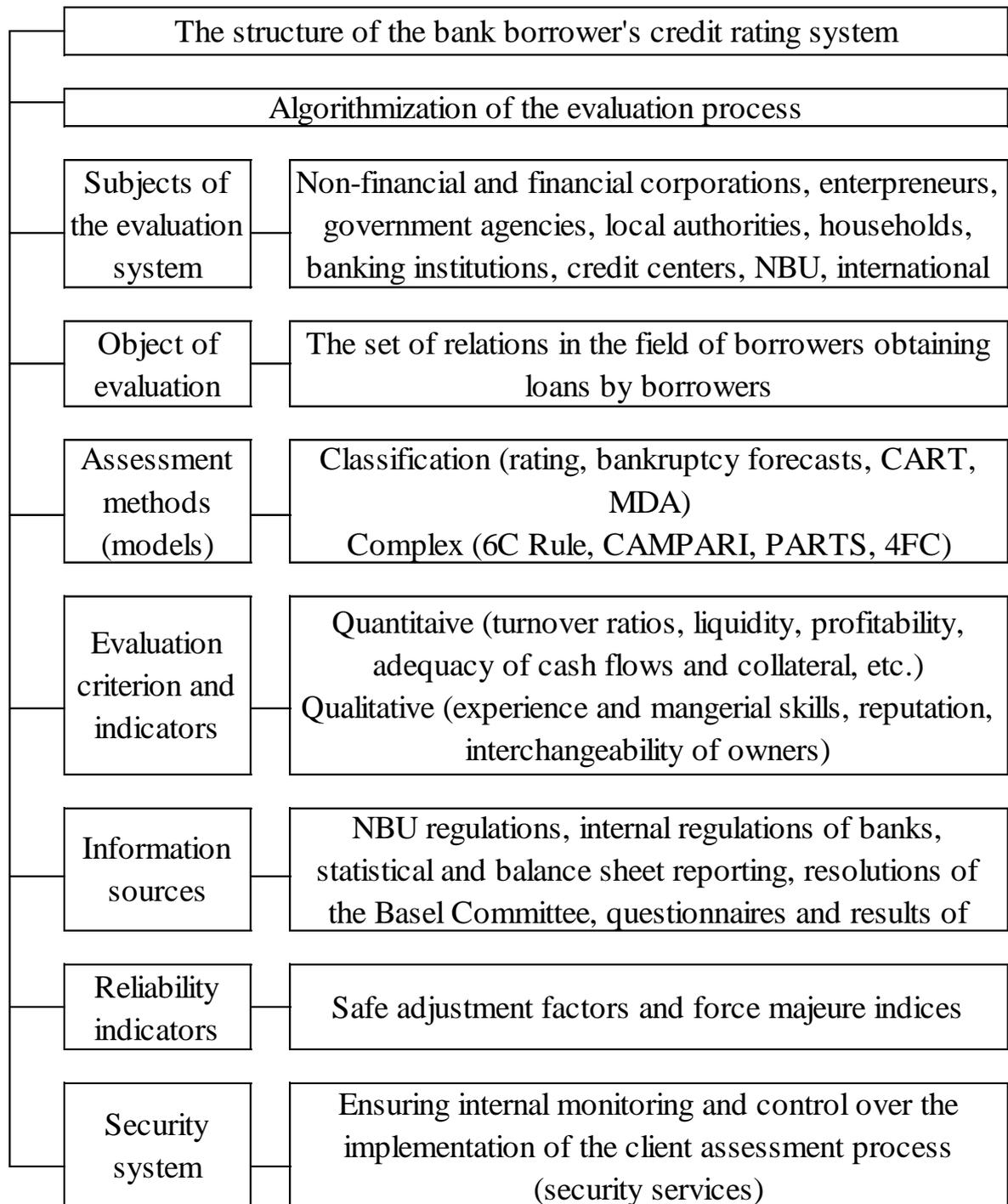


Fig. 1.1. The structure of bank's borrower's credit rating system

Source: Zinchenko (2013).

As it becomes clear, a typical structure can have more components and for each subsequent borrower, it will have a different expression. However, the essence of the construction of creditworthiness remains the same and in most cases repeats.

If we deviate from the existing achievements of national and foreign scientific thoughts, which more thoroughly explore the study of this issue, it becomes obvious

that the assessment of creditworthiness of the borrower is inextricably linked with its direct marketing and financial results, success or failure of its operation within industry, as well as attitudes towards recruitment and personnel management. It should not be forgotten that many factors influence on satisfactory operation activity of the enterprise. These include, in particular, the type of industry affiliation, the variety of resources, the success of the management staff, the company's positioning in the market, the modernization of a successful management strategy, the effectiveness of internal and external business communications (Zhytar, 2019)

That's why further differentiation of the formation of methods for assessing creditworthiness has emerged, as it laid the foundations for doubts about the correctness of previous analytical banking research when the main key indicators were considered only quantitative valuation parameters, while qualitative ones have been ignored for a long time when the rapid development of foreign banking systems has shown significant backwardness of national methodological practices of credit assessment and the inability to ensure their rapid response to transformational changes in the global credit system and modernization of approaches to credit formation, credit discipline and staff competence.

At the initial stage of creditworthiness assessment, the selection of certain criteria is taking into consideration, which should ideally meet the borrower.

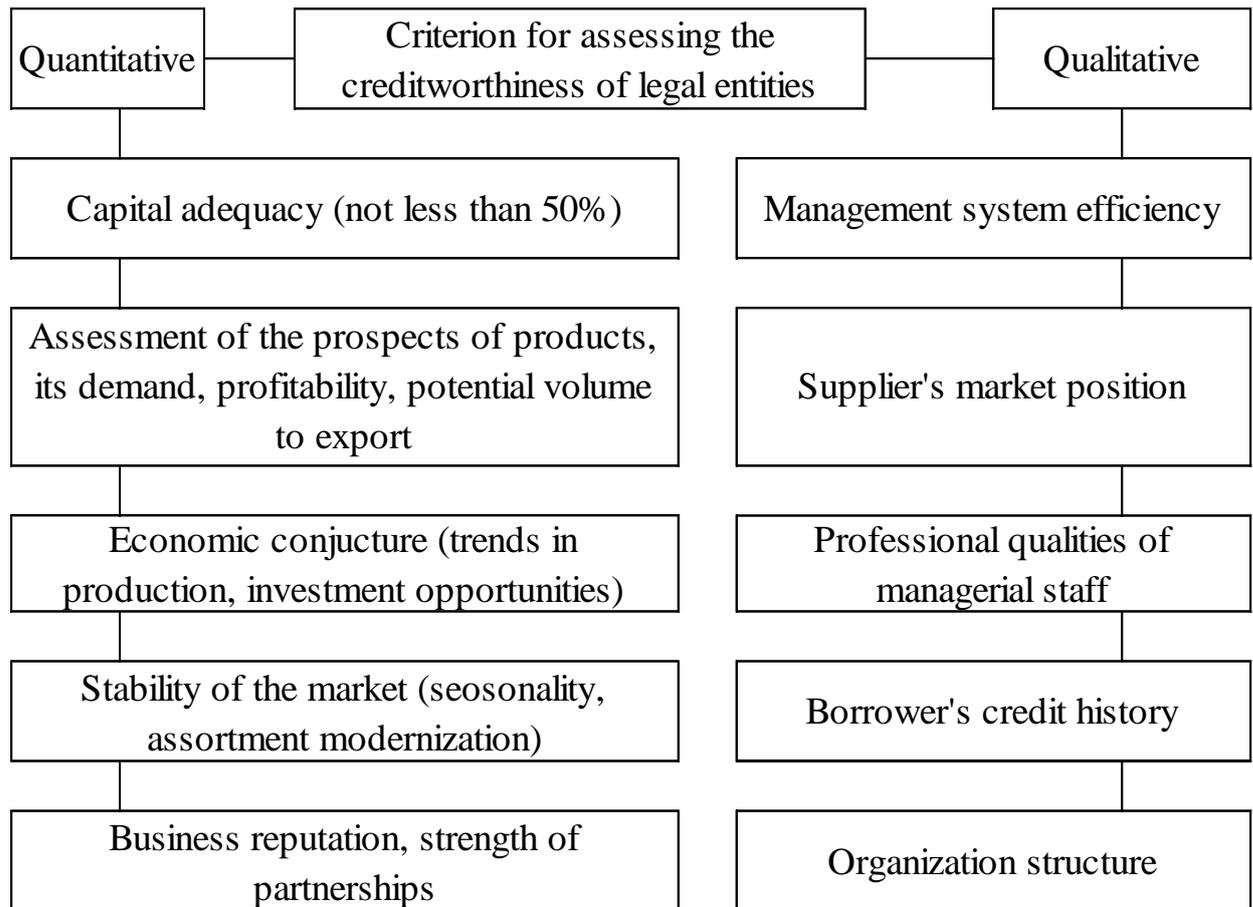


Fig. 1.2. Creditworthiness assessment criterion

Source: Koval'chuk A. V (2015).

The represented Figure demonstrates how multifaceted is the process of assessing a potential borrower legal entity can be and what extensive work should be done to systematize and analyze the necessary data. So, when deciding on the appropriateness of the loan, the bank must rely not only on the value of past and current periods, but also prepare a forecast for the development of the enterprise, the relevance of its products, opportunities for investment infusions and more.

The features of scientific and practical approaches to choosing the most optimal model of creditworthiness assessment will be analyzed later, but note that among scientists and representatives of the banking business there is no consensus on the correctness or appropriateness of certain methods, but more advanced participants, in this process, tend to applicate separate complex methods of transformation type, specializing in substantiation of the expediency of providing credit resources to the borrower. At the same time, proponents of classification

techniques emphasize the more accurate expression of the required results, comprehensive coverage of a significant mass of numerical information material, which allows formulating better predictive conclusions than empirical research.

Today, most banking institutions are gradually distancing themselves from the practice of complex settlements, because here even the smallest error can dramatically change the entire result of the credit assessment and cause irreversible changes in the derivation of the total result. Therefore, preference is given, as a rule, either to simplified rating models (credit scoring) of the point type, or, in the modern interpretation - to various schemes for predicting the borrower's default (Mys'kiv, 2014).

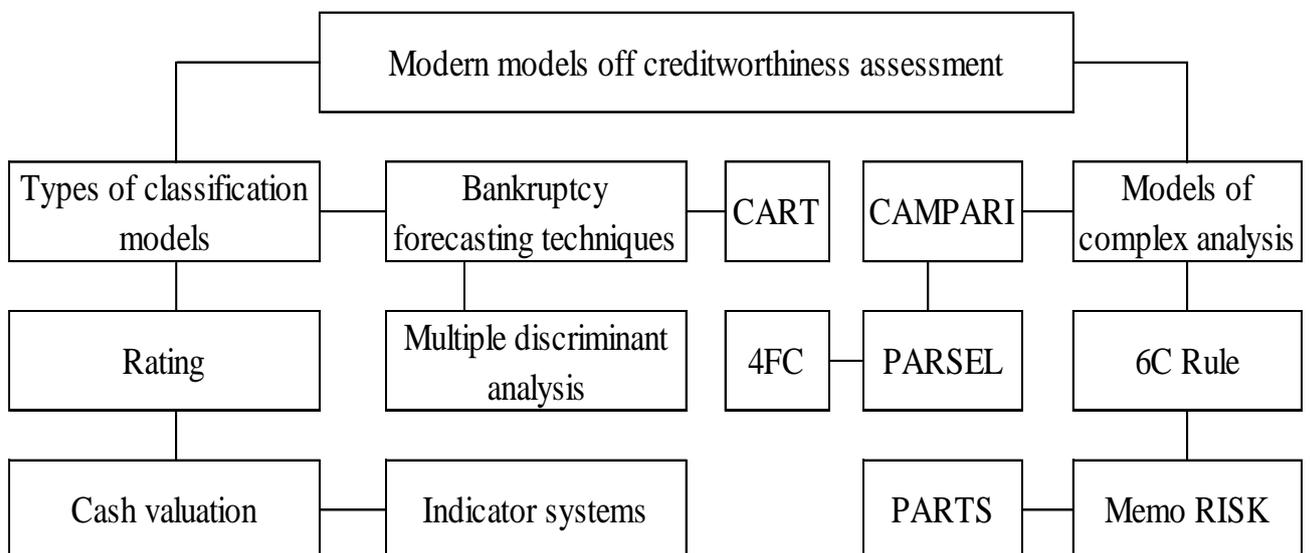


Fig. 1.3 – Models of creditworthiness assessment

Source: Mys'kiv (2014).

The shown models in the Figure embody two approaches to solving the problems of creditworthiness assessment efficiency: conservative and market. According to the first approach, the definition of creditworthiness is through the demonstration of a functional relationship, which has the form of a discriminant function with many variables, where the role of the variable is performed by one or another financial ratio. Another approach is less complicated and allows you to assess the feasibility of lending using communicative, market, target, business indicators.

These methods give a key role to the qualitative characteristics of a potential borrower of the bank: business, market, management, HR-management techniques and more. The use of the found methods in different countries:

- CAMELS (World bank) for Capital, Assets, Management, Earning, Liquidity, Sensitivity;
- CAMPARI (European banks) for Character, Ability, Marge, Purpose, Amount, Repayment, Insurance;
- PARSER (Great Britain) for Person, Amount, Repayment, Security, Expediency, Remuneration;
- MEMO RISK for Management, Experience, Market, Operations, Repayment, Interest, Security, Control;
- 6C (USA) for Character, Capital, Cash, Capacity, Control, Collateral, Conditions;
- 4FC for Management Quality, Industry Dynamics, Security Realization, Financial Condition;
- COPF (Germany) for Competition, Organization, Personnel, Finance.

In fact, the most valuable can be considered those models, the use of which allows you to harmoniously take into account both quantitative indicators of the firm and qualitative (ratings and comprehensive rating systems). The greatest value of complex models is their application, which allows to provide a larger assessment from a holistic perspective, save time needed to review loan applications and submitted business plans.

Thus, based on the system of valuation methods, it can be noted that the parameters that are taken into account when considering an opportunity to grant a loan for legal entities include the following: reputation (personal qualities of the borrower), external and internal aspects of business, loan collateral, the financial positioning of the enterprise and possible deviations from it, projection of cash flow for the term of the loan and possible investments, the type of the loan and its appropriate use monitoring, the size of the borrower's capital, the quality of financial statements provided. (Pravlinnya Natsional'noho banku Ukrayiny, 2016).

Usually, each banking institution develops its own internal regulations and valuation indicators, which must be relevant to the requirements dictated by the country's central bank. Thus, the essence and subject-object content of the stages of consideration and assessment of creditworthiness, as well as the target orientation of the assessment and the set of key indicators may differ for each valuation model.

If we consider in more detail the process of conducting a preliminary analysis of the borrower's creditworthiness, it should include the following stages: firstly, structuring of the information base, which serves as the basis for the analysis of creditworthiness; assessment of the degree of reliability of information provided by the borrower; preliminary analysis of a potential borrower of the bank; software processing of the received information materials; conducting a comparative analysis of certain financial indicators and ratios with regulatory indicators; identification of the share of financial ratios in the rating component of the indicator; calculation of the rating (integrated) indicator of the borrowing organization; assigning a class (rating) to a potential borrower on the basis of an integrated indicator; analytical assessment of non-financial indicators (qualitative indicators); formation of an expert opinion based on the results of the borrower's creditworthiness assessment. Today, banking institutions, as a rule, develop and widely use their own methods and systems for assessing the creditworthiness of borrowers, taking into account the interests of the banking institution. It is clear that most of these methodological developments and regulations are confidential and are not communicated to the general public of users and customers in order to preserve the principle of banking secrecy and non-disclosure of information (Pravlinnya Natsional'noho banku Ukrayiny, 2020).

Summarizing, it should be noted that the structural features, step-by-step assessment of creditworthiness of different groups of borrowers are quite stable, which means the presence of transformations only in terms of quantity and aggregation of methods, indicators and evaluation criteria, which depends upon the direction of the bank's credit policy, the peculiarities of its activity, market position,

supervision control by the National Bank of Ukraine, belonging to a group of banks with foreign capital.

### 1.3. Creditworthiness as the basis of the credit process and minimization of credit risk

It is logical enough that sufficient and high-quality creditworthiness assessment is one of the key components of the credit process and, as a result, minimizes the credit risks of the banking institution. One of the important stimulating factors for the banking system before shifting to international standards for assessing the level of credit risk in accordance with the requirements of Basel II and subsequently Basel III and European Union regulations, and hence the international system of complex credit assessment of borrowers is adoption of the "Regulations on determining the amount of credit risk by banks on active banking operations", approved by the NBU Resolution № 351 as of 30.06.2016. This document contains provisions for the introduction of a rating classification system and the selection of a set of adjustment factors to assess the level of aggregate credit risks and further and the degree of creditworthiness of borrowers - legal entities and individuals, which is one of the key recommendations of Basel III. The process of forming a rating class of a bank borrower should include an illustration of the level of default risk, which is actually a typical requirement for borrowers in this category, and the main criteria that should be used to assess this level of credit risk of the bank.

Based on the content of Part 4 of Annex 7, contained in the European Parliament Directive, the "rating system" includes all defined methods, processes, control techniques, collection of initial data and information technology base that ensure proper credit risk assessment, distribution of class requirements for degree of credit risk or to pools (ratings), as well as a quantitative analytical assessment of the probability of default and loss ratios for equivalent types of liabilities (risk loss) (Zhuravel', 2011). To assess the borrower's creditworthiness, the Basel Committee recommends to use internal rating-based approach (IRB). According to the

provisions contained in the regulations of Basel II and Basel III, the system of internal rating for assessing the level of credit risk must meet the following basic requirements:

- the banking institution collects and stores all necessary information to ensure effective support of credit risk measurement and management processes;
- ensuring sound assessment of the debtor, risk differentiation, accurate and consistent quantitative risk assessments;
- the credit institution in its structure must form a credit risk control department, which is responsible for its rating system and is independent of adverse effects;
- the bank substantiates the purpose and procedure of functioning of its own rating system and the methodology of its development, as well as independently assesses the effectiveness of the system.

As a result, we can conclude that rating systems for assessing creditworthiness can be attributed to the latest approaches of analyzing the creditworthiness of the bank borrower. Providing a customer with a credit rating can no longer be considered a key goal of creditworthiness assessment, but refers only to one of the components of the system of such assessment. It is clear that the final assessment of the creditworthiness of the borrower of the bank is to determine the probability of default of the borrower of the banking institution.

Therefore, based on the content of the Regulation № 351 banking institutions determine the quantitative expression of credit risk for all possible active operations of the bank in the form of total credit risk for such transactions as of the first day of each month, following the reporting, in hryvnia terms (or using the hryvnia equivalent at the official exchange rate of hryvnia on a certain date to foreign currencies set by the NBU) (Zhyravel', 2020).

The banking institution determines the credit risk on assets in accordance with the following principles of analysis:

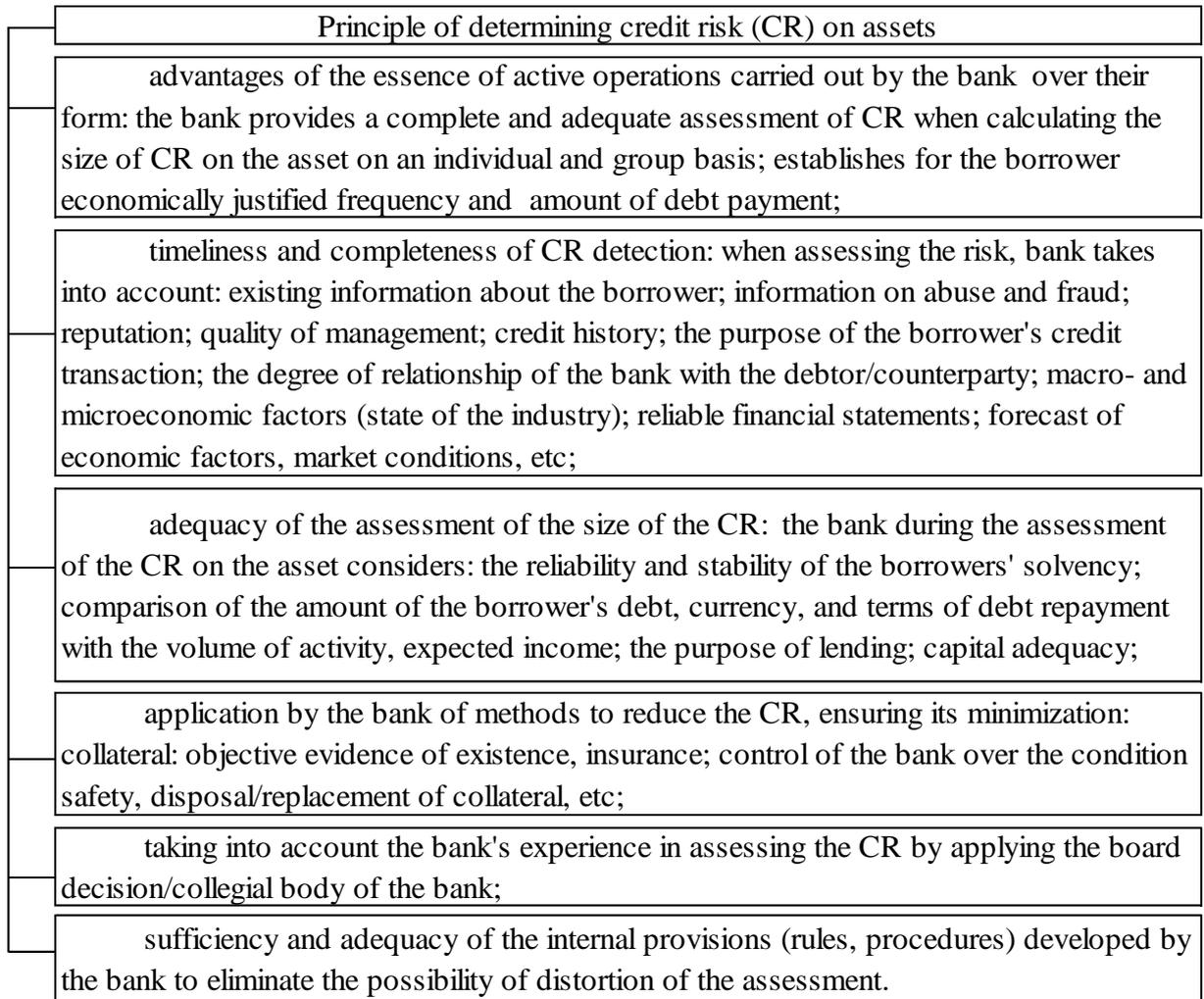


Fig. 1.4 Principles of determining credit risk on assets

Source: National bank of Ukraine 2020 (2020).

As can be seen from the presented Figure, regulators were primarily guided by the instructions of the Basel Committee and tried to adapt these provisions as much as possible to the national system of credit operations and credit risk management.

The characteristics of the principles of timeliness and completeness of credit risk detection and ensuring the adequacy of credit risk assessment are particularly diversified. The first principle takes into account not only qualitative but also quantitative parameters of the borrower, macro- and microeconomic processes, industry characteristics, business culture, i.e. the degree of harmony of the borrower's relations with other banks, partners, counterparties, transparency of the client, even before inclusion in this list of forecasts of the market situation, changes

in interest rates, inflation expectations, unemployment, absence / availability of demand for the products of a potential borrower, etc. Another one specifies the importance of financial criteria: comprehensively evaluates the annual, quarterly, consolidated statistical reporting of the borrower for several years, assesses the level of stability and reliability of the business, the success of the borrower, the availability of guarantees from shareholders or guarantors (Vyhovs'ka&Simeonova, 2016).

It is important to take into account the banking institution's own practice regarding the ability to adjust the list of factors influencing on the deterioration of the borrower's class, increase the number of criteria or signs of default of the borrower, the ability to adjust the number of criteria used to quantify the credit risk components (PD and LGD) on the asset within the range of defined ranges, as well as the component of the LGD component - the amount of income from the borrower, other than the value of collateral (RC) provided by the mortgagor.

Also, different regulations and terminology of international banking acts began to use more often in domestic law, for instance, in the Regulation №351 following interpretation was used first time: "the use of credit risk components (EAD – exposure at default, PD - probability default of the debtor/counterparty, LGD – loss given default)", the calculation of which is specified in particular in international banking documents. National law also envisages the fact that the determination of credit risk on an asset occurs from the date of its recognition in the balance sheets and continues until its existence is confirmed by the balance sheet, in other words "on accrual basis". In Figure 1.5. the list of subjects of credit process regarding which its assessment of creditworthiness and level of credit risk on active operations is presented.

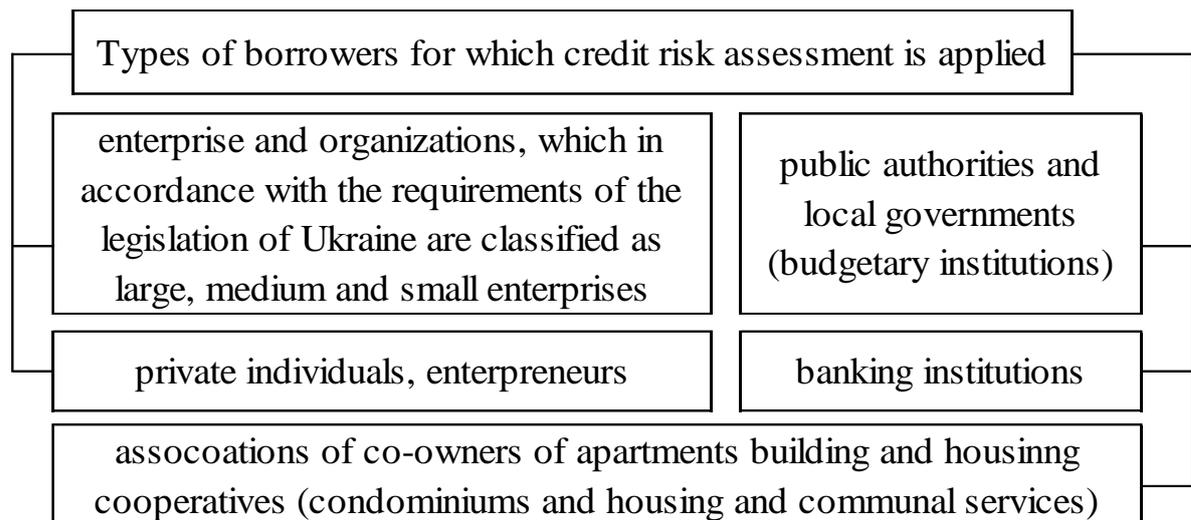


Fig. 1.5 – Types of borrowers for which credit risk assessment is applied  
Source: Vladymyrs'ka (2013).

As the Figure shows, the distribution of borrowers was implemented in accordance with the peculiarities of the national economy and its sectoral characteristics, as the existence of some categories of borrowers according to European norms is not provided or more generalized in the characteristics of the evaluation process. In general, the allocation of the communal sector could be carried out in a complex, or modernize and create a single system of housing and communal services, which is currently only in the modernization stage. In general, it is difficult to assess the level of default of such categories of borrowers as utilities and government agencies, as most distortions and inconsistencies are found in the performance of these subjects of the national economy and make a transparent and qualitative analysis of modern realities is almost impossible. It is necessary to understand on what active operations the banking institution carries out definition of values of credit risk:

- 1) credits given to legal entities and private individuals;
- 2) loans, as well as claims to banking institutions;
- 3) current financial debt of borrowers;
- 4) receivables from business transactions;
- 5) bond and securities;

- 6) shares of business entities and financial corporations, as well as other financial investments;
- 7) secondary financial assets in circulation.

As noted above, domestic banks calculate the amount of credit risk on active operations in two ways: individually and using the group method. For example, in order to calculate the amount of credit risk on a group basis, financial assets are grouped with similar features of credit risk and in accordance with the procedure set out in the Regulation № 351 The banking institution forms the values of PD and LGD ratios, which must correspond to the highest (worst) maximum allowable values of a certain range of fluctuations provided by law for the relevant class of borrower and the type of collateral for credit operations, only in the following cases:

- a. when the bank does not have its own personal experience in managing such operations - for a banking institution that has been conducting banking activities for more than three years;
- b. in case of non-implementation / careless structuring - in particular for a bank that is considered to be newly established and conducts banking activities in the country for less than three consecutive years.

At the same time, potential calculations of numerical values of credit risk is worth mentioning as a separate point. The Regulation provides the following calculation of the amount of credit risk on assets on an individual basis (Eqs. 1.1 – 1.5):

$$CR_{iHD} = \max \left\{ 0; PDx(EAD - (\sum_{ij} ((CVxk)_i) + RC)) \right\}, \quad (1.1),$$

where  $CV_i$  – this is the value of the i-th type of collateral, which is taken into account in calculating credit risk.

In the case of the presence of several types of collateral for a single asset. If a pledge is absent or does not correspond at all to the list of criteria and principles of general acceptability defined in Section X of Resolution № 351, the value of CV equal to "0" is taken into account;

$k_i$  – liquidity ratio of the  $i$ -th type of collateral, determined by the bank in accordance with the annexes to the Regulation of the NBU as of 30.06.2016

Based on the formed assumption on the amount of costs for the sale of collateral, the bank applies lower value of the liquidity ratio for collateral;

RC – other receivables, such as insurance indemnity, financial guarantee, sale/transfer of property and property rights of the borrower / property guarantor, except for the property included in the calculation of the CV value (Zhuravel', 2011).

The amount of RC included in the calculation of the credit risk volume is determined on the individual assumption of the banking institution, but may not exceed five percent of the amount of debt that is not covered by the collateral (adjusted for current liquidity ratio). The calculation of formula 1.1 is based on the definition of the formula:

$$RC_{ind} = PD_{ind} \times LGD_{ind} \times EAD_{ind} \quad (1.2),$$

where  $CR_{ind}$  is the amount of credit risk on the asset on an individual basis;

$PD_{ind}$  – probability of default of the borrower on the asset determined by the bank in accordance with the requirements of the Regulation;

$$LGD_{ind} = 1 - RR_{ind} \quad (1.3),$$

where  $RR_{ind}$  – value of the ratio that reflects the level of repayment of debt on the asset through the sale of collateral and some other income;

$EAD_{ind}$  – risk exposure of the asset formed at the measurement date.

When determining this indicator for legal entities, 51% of the share structure of which belongs to state structures, the value of the  $LGD_{ind}$  indicator is 0.3. The calculation of the amount of credit risk on assets on a group basis is implemented using the following formula:

$$CR_{группы} = \sum_{mn} EAD_m \times PD_{группы} \times LGD_{группы} \quad (1.4),$$

where  $CR_{группы}$  – amount of credit risk on a set of financial assets;

$n$  – total number of loans in the group of financial assets;

$m$  – serial number of the loan in the group of financial assets;

EAD – exposure at risk generated at the time of assessment;

$PD_{\text{группы}}$  – the probability of default of borrowers included in the group of financial assets, calculated by the bank in accordance with the provisions of the Regulation;  
 $LGD_{\text{группы}}$  – a ratio that shows the level of losses per group of financial assets in the case of default, and it is determined in accordance with the requirements of law.

A key feature of the new creditworthiness assessment methodology is the fact that to calculate credit risk, the banking institution uses rating information on the borrower according to an international scale - reliable information which is confirmed by a significant list of leading global rating agencies such as Standard & Poor's and Moody's Investors Service, Fitch IBCA and so on. If there are ratings with higher and lower values at the same time, the worst rating value or rating of the issuer, counterparty, seller or group is definitely chosen. It is worth noting that for each asset, the amount of receivables from debtors, financial liabilities, the banking institution forms its own position. In order to calculate the amount of credit risk on the asset in accordance with the provisions of regulatory and banking regulations, a bank determines the value of each of the components of credit risk (PD, LGD and EAD) depending on the type of borrower (legal entity (except bank and budgetary institution)), type of asset, type of collateral, debt currency (national or foreign), method of valuation of the asset (on an individual or group basis) (Skochelyas, 2019).

Taking into account the considered approaches, we propose to apply the following sequence of stages of assessing the borrower's creditworthiness based on the use of an internal rating system, which includes the following components:

- 1) formation of factors influencing the borrower's competitiveness;
- 2) choosing a model for calculating the integrated indicator depending on the type of borrower;
- 3) structuring of financial ratios included in the adopted model of integrated assessment of the borrower's credit risk;
- 4) implementation of an integrated assessment of the borrower's solvency;
- 5) clarification of the borrower's rating class and the probability of its default;

- 6) making a final decision on the application for the possibility of obtaining a loan by the borrower, taking into account all the results of the creditworthiness assessment.

The main problem in developing internal rating models is the need to accumulate a significant amount of primary information to determine the level of default risk for each of the borrowers. In order to set up internal rating systems, banks must document the number of defaults by individual classes in terms of individual reporting periods. Thus, the transition to a rating system for assessing creditworthiness involves the formation of a database on the financial condition of the borrower. We believe that the application of the proposed approaches to improve the lending process at the stage of assessing the creditworthiness of the borrower allows unifying the procedure of such assessment, on this basis to increase the efficiency of credit risk management, which will ensure the necessary stability.

CHAPTER 2  
PRACTICAL ASPECTS OF ASSESSING THE BORROWER'S CREDIT  
CAPACITY ON THE EXAMPLE OF THE COMMERCIAL BANK JSC  
“PROCREDIT BANK”

2.1. General characteristic of JSC “ProCredit Bank”

ProCredit Bank began operating in Ukraine in February 2001 as a bank that specializes in providing financing to micro, small and medium-sized Ukrainian enterprises. Until autumn 2003, the bank operated under the name “Microfinance Bank”. The change to the current name took place on the basis of the founding shareholders’ decision to unite the banks established by them worldwide, all of which focus on lending to small businesses, under a single name. At present, there are ProCredit Banks in the following Eastern European countries: Albania, Serbia, Bulgaria, Romania, Macedonia, Bosnia and Herzegovina, Kosovo, Georgia and Moldova.

In 2004 ProCredit Bank opted to broaden its range of services for both entrepreneurs and private households. The retail section of ProCredit Bank now offers easy-to-use payment cards and practical deposit products, designed for individuals with different income levels. ProCredit Bank obtained the highest international rating possible in Ukraine from Fitch Ratings.

Development-oriented organizations including international own ProCredit Bank and determine its policy. One of their main objectives is the development of private enterprises in Europe and throughout the world. In Ukraine, the shareholders have pooled their extensive experience gained in countries all over the world and adapted it to Ukrainian conditions in order to found a bank that can provide strong and reliable support to Ukraine's small and medium-sized enterprises and private entrepreneurs.

The ownership diagram of Joint Stock Company «ProCredit Bank» as of 9 January 2020 is presented below on Figure 2.1.

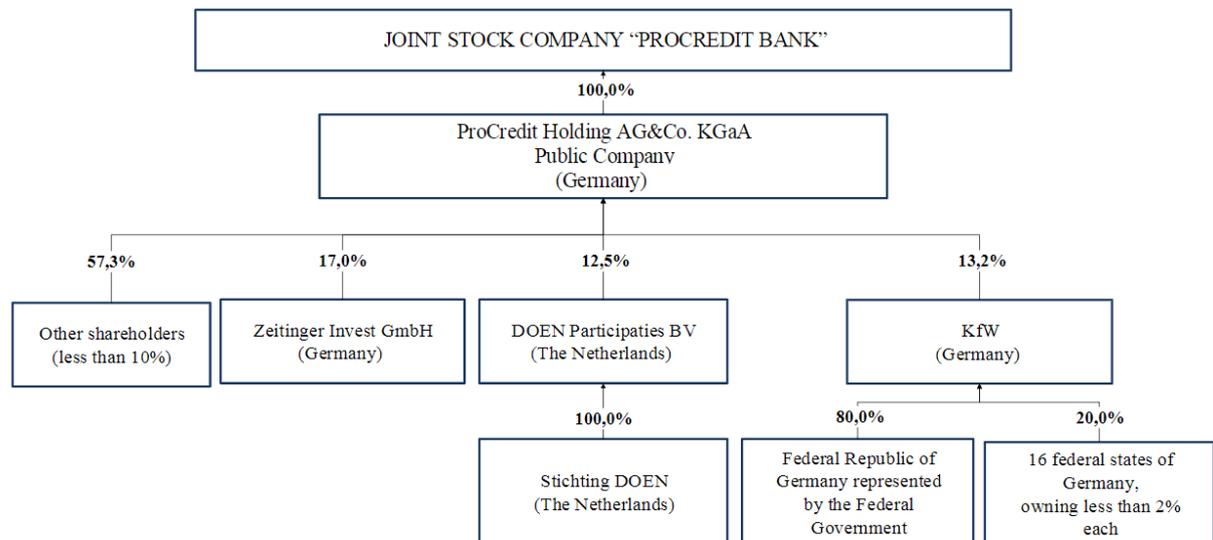


Fig. 2.1. Ownership structure of JSC "ProCredit Bank"

Source: ProCredit Bank, official website (2020).

The ProCredit group is made up of banks that have specialized in small and medium-sized enterprises in transition economies. The business model of the bank consists of the core activities of traditional banking business. The bank is active in Eastern Europe, South-Eastern Europe, South America and Germany. The superordinated company of the group is ProCredit Holding AG & Co. KGaA, based in Frankfurt am Main, hereinafter referred to as ProCredit Holding. Corporate strategy and activities are guided by the objective of making a sustainable contribution to economic, social and environmental development in the countries of operation. ProCredit's business strategy is based on the formation of long-term relationships with clients and staff and on careful risk management. The group does not engage in speculative lines of business. With ProCredit's business policies focused on sustainability, the bank has been able to record profits each year, achieving steady performance even in times of economic volatility. Through the collaboration with SMEs, it's aim to contribute to creating jobs, enhancing capacity for innovation and raising ecological and social awareness. In this regard, the bank concentrates on enterprises with stable, formalized structures, and attaches particular importance to supporting local production, especially in agriculture. SME clients value ProCredit as an equal partner that understands their needs and the unique

challenges they face. The bank offers a broad range of transparent financial services. It promotes a savings culture and improves the financial stability of clients. Lending to private clients is limited and serves mainly to enable them to acquire and maintain long-lasting assets, as is the case, for example, with energy-efficient home improvement loans. As a banking group with an ethically oriented corporate mission, it not only attaches great importance to ensuring that institutions are not used as a vehicle for money laundering, terrorist financing or other illegal activities, but equally forcefully the bank combats fraud risks at all ProCredit banks. To ensure compliance with these standards, a uniform framework is applied at all banks which is sometimes even stricter than the German, European and local regulations. Moreover, employees of ProCredit are instructed to counteract the risks of money laundering and fraud even before they occur, based on the establishment of long-term client relationships and a culture of open and transparent communication. The ProCredit group has a Code of Conduct which is binding on all staff members. The Code of Conduct builds upon the fundamental principles of human dignity and emphasizes our strong commitment to show mutual respect for each other and act responsibly. It aims to serve the staff as an ethical compass for their behavior and their decisions both within and outside the company. The Code of Conduct also contains an Exclusion List, which is provided in Annex A, specifying business practices that are harmful from a social, moral or ecological standpoint or that are not in compliance with usual health and safety regulations, and must therefore not be financed by the ProCredit banks. The ProCredit group applies an intensive and comprehensive staff selection procedure and runs a structured, group-wide training programme in its own training centers. The aim is to ensure that staff members meet the high standards the bank expects of them, expectations which go far beyond mere professional skills, and to assure compliance with ethical standards. ProCredit local and inter-regional trainings cover not only business management and financial subjects, but also historical, philosophical, ethical and socio-political topics. The bank offers staff long-term career prospects based on a transparent, standardized group-wide salary and promotion structure. This also includes regular feedback talks

and performance assessments, as well as participation in our multi-level continuing professional development programmes. The ecological and social sustainability of the economic development the bank supports is a particularly important part of its development policy vision. In this context, environmental protection plays an especially prominent role. The ProCredit group has developed a comprehensive environmental management system. This consists of internal measures aimed at minimizing the negative impact of banks on the environment, such as reducing its own consumption of energy and materials, and our waste production. In addition, as a standard part of its business relationships with clients, the bank conducts an analysis of the environmental impact of its activities, with a view to uncovering evidence of environmental damage, noise pollution and socially unacceptable working conditions. Furthermore, the bank encourages its clients to invest in energy efficiency, renewable energy and environmentally friendly technologies (ProCredit Bank, official website 2020).

ProCredit Holding is the superordinated company of the group, responsible for maintaining an adequate level of equity for the group and ensuring that all reporting, risk management, anti-money laundering and compliance obligations required under German and European banking regulations, and particularly the requirements defined in section 25a of the German Banking Act (“KWG”), are met. At a consolidated level the ProCredit group is supervised by the German financial supervisory authorities (BaFin and Bundesbank). The Management and selected management-level staff of ProCredit Holding are members of the supervisory boards of the local ProCredit banks, and are thus involved in all strategic business processes. ProCredit Holding plays an important role in determining the group’s human resources policies and in the development and delivery of curricula in the ProCredit academies. All managers of ProCredit banks must graduate from these academies. Moreover, ProCredit Holding sets the overall policy guidelines and standards regarding the material areas of banking operations in order to ensure that appropriate organizational structures and processes are in place in the ProCredit banks. These guidelines and standards are supplemented by the exchange and dissemination of

best practices at seminars, workshops and training sessions on specific topics that ProCredit Holding holds on a regular basis. Optimal IT solutions are a central part of implementing the business and risk strategies of the group. Quipu GmbH, a 100% owned subsidiary of ProCredit Holding, develops software solutions especially for the ProCredit group. In close collaboration, the systems used in connection with client operations, treasury functions, reporting and accounting are developed and implemented by Quipu. The IT and software development priorities are set in the Group IT Strategy and approved by the Management of ProCredit Holding. Furthermore, the ProCredit Bank in Germany supports the group by assuming a central role in the group treasury function and by providing funding opportunities to the ProCredit banks. It also offers a number of the ProCredit banks in Eastern Europe the possibility of co-financing for medium-sized business clients. In Germany, it offers clients online savings facilities and is an interesting partner for German companies with business relationships in our countries of operation. In addition to financing and accounts, the ProCredit Bank in Germany offers international payment transactions at attractive conditions, not only between our countries of operation but also to other countries. The ProCredit group divides its business operations into regional segments. The banks are split into the following four regions:

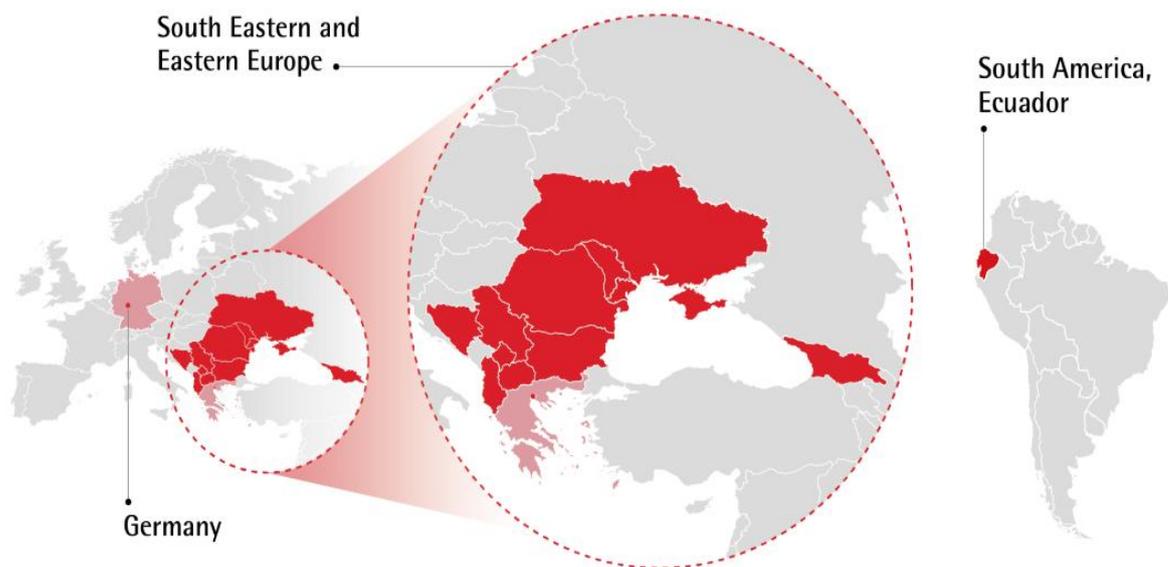


Fig. 2.2. ProCredit worldwide

Source: ProCredit-Holding, official website (2020).

- South Eastern Europe, accounting for 44.8% of the group's total assets, consisting of seven banks in Balkan countries: Albania, Bosnia and Herzegovina, Bulgaria, Kosovo, Macedonia, Romania and Serbia;
- Eastern Europe, accounting for 12.5% of the group's total assets, with three banks located in countries currently or formerly belonging to the Commonwealth of Independent States (CIS): Georgia, Moldova and Ukraine;
- South America, accounting for 15.6% of the group's total assets, consisting of one bank in Ecuador;
- Germany, accounting for 17.2% of the group's total assets, consisting of the ProCredit Bank in Germany, ProCredit Holding, Quipu and the ProCredit Academy in Fürth (ProCredit-Holding, official website).

Part of the overall mission of the ProCredit group is to set standards in the financial sectors in which the bank operates. The bank is striving to make a difference not only in terms of the target groups where serves and the quality of the financial services provides, but also with regard to business ethics. Strong corporate values play a key role in this respect and form the foundation of business ethics. The following principles guide the operations of the ProCredit institutions (ProCredit Bank, official website):

- **Transparency:** The bank provides transparent information to customers, to the general public and to its employees. For instance, it ensures that customers fully understand the terms of the contracts they conclude with the bank, and we engage in financial education in order to raise public awareness of the dangers of intransparent financial offers.
- **A culture of open communication:** The bank communicates openly, fairly and constructively with each other. It deals with conflicts at work in a professional manner, working together to find solutions.
- **Social responsibility and tolerance:** The bank offers to clients sound, well-founded advice. Before offering loans to clients, we assess their economic and financial situation, their business potential and their repayment capacity in order to avoid over-indebtedness and to provide appropriate financial services. In addition,

we are committed to treating all customers and employees with fairness and respect, regardless of their origin, colour, language, gender or religious beliefs. We also ensure that requests for loans are evaluated in terms of the applicant's compliance with our ethical business practices. No loans are issued to enterprises or individuals if it is suspected that they are making use of unsafe, environmentally harmful or morally objectionable forms of labour, in particular child labour.

- High professional standards: Our employees take personal responsibility for the quality of their work and always strive to grow as professionals.
- Personal integrity and commitment: Complete honesty is required of all employees in the ProCredit group at all times, and any breaches of this principle are swiftly and rigorously dealt with.

These principles represent the backbone of bank's corporate culture and are actively applied in day-to-day operations. They are reflected in the ProCredit Code of Conduct, which translates the group's principles into practical guidelines for our staff. To make sure that new employees fully understand all of the principles that have been defined, induction training includes sessions dedicated to the Code of Conduct and its significance for all members of the team. Regular refresher training sessions help to ensure that employees remain committed to high ethical standards and are kept abreast of new issues and developments which have an ethical dimension for the institution. These events allow existing staff to analyze recent case studies and discuss any grey areas.

Another aspect of ensuring that institutions adhere to the highest ethical standards is consistent application of best practice systems and procedures to protect ourselves from being used as a vehicle for money laundering, the financing of terrorism or other illegal activities. Staff members are trained to apply the "know your customer" principle, and to carry out sound monitoring and reporting in line with the applicable regulations. Anti-money laundering and fraud prevention policies are regularly updated and exercised throughout the group to ensure compliance with local and international regulatory standards (ProCredit Bank & ProCredit Holding).

## 2.2. Characteristics of the process of credit analysis of the borrower – a legal entity

ProCredit Bank is the bank, which is continuing to grow and develop in terms of digitalization despite the current state of Ukraine's economy or work under quarantine. Notwithstanding the all obstacles and challenges the bank has to face, it is still able to sound off about one of the lowest non-performing indicator in the amount of 4,4% as of 2020 among the biggest banks that granting loans to businesses. The effectiveness of the bank can be traced through the last financial statements provided in Annexes B and C.

ProCredit Bank has its peculiarities regarding the assessment of business and is characterized as a bank with such a conservative approach. Here highlighted the minimum requirements to business clients' creditworthiness analysis in the ProCredit and approaches to be taken by each ProCredit Bank to appropriately manage credit risk. The standards set forth below regarding the banks' lending to business clients differentiate between Small credit exposures and Medium credit exposures. The key distinguishing feature with regard to these categories is the size of the credit exposures; Small credit exposures to business clients are defined as exceeding EUR 50,000, with an upper limit of EUR 500,000. Medium credit exposures to business clients are those exceeding the maximum amount for Small exposures, i.e. exceeding EUR 500,000. The bank provides financing for Medium clients not exceeding the amount of EUR 10,000,000.

The analysis of creditworthiness for Small and Medium credit exposures must consist of the following aspects (ProCredit Bank, 2020):

- assessment of the market in which the client operates; for Medium credit exposures, the focus is on the position of the client in this market and the competition faced;
- the legal status, ownership and management structure of the business, the level of experience of the members of the management team and their respective areas of responsibility;

- the organizational structure of the company, focusing on the risks arising from inadequately defined or inefficient processes;
- assessment of the business client's financial situation, in order to gauge his/her financial strength and capacity to meet payment obligations to the bank;
- assessment of the project for which the client is seeking funding;
- assessment of the client's credit history.

The assessment of the market and the client's market position provides an overview of the market in which the client operates, identifying the client's main competitors. The main sources of information are interviews with the owners and managers of the business client's enterprise, and comparisons with other clients who have businesses in the same economic sector and the same or similar area.

The scope and depth of the market analysis should be in line with the client's market position and the size of the exposure. Apart from the main sources of information, the bank may use data published by the local statistical office, market analyses published either by government agencies or by other local and foreign organizations, sector, industry and market assessment prepared by the third parties.

A satisfactory outcome of this analysis would be the conclusion that the risks inherent to this area of business are appropriately managed by the client and that the client has long-term prospects in the given market.

The assessment of the ownership and management structure provides an overview of the management and the organization of the business client's enterprise and how decisions are taken. The bank must familiarize itself with the history and other relevant features of the owners of the business, thus verifying that the business was built on solid foundations and that the owners are respectable and reliable individuals. If there are different owners, their relationship to one another must be explained, as well as their experience in the business, their competencies, their obligations and rights within the management structure, and any profit-sharing arrangements. The sources of information for this analysis are interviews with the owner, management, and some key employees; references that can be obtained from

other enterprises; and the bank's own experience in doing business with the client. In addition, the bank needs to take into consideration the historical financial development of the company and to assess the quality of the decisions made in the past.

An anti-money laundering (AML) assessment should be seen as an integral part of the analysis of creditworthiness of the ProCredit banks' business clients. This encompasses not just a formal AML check, but rather an integrity checks with the wider scope of identifying the clients' level of transparency; the ethical aspects of the business activity; and the reputation of the clients in the society. Ultimately, it should be a driver for determining whether the client meets the desired profile and does not oppose the ProCredit Bank's principles of doing business in any significant way. An integrity assessment is especially important for the Upper Medium clients, who have a greater impact in our countries of operation and have higher public exposure.

A satisfactory outcome of this analysis would be the conclusion that the owners are respectable and reliable individuals and that the management team is knowledgeable, reliable and sufficiently experienced to manage the enterprise well.

The assessment of the organization of the company provides an overview of the overall organizational structure of the company, the design of its processes, the internal controls established to ensure quality and efficiency, and details about the personnel structure (number of employees, qualifications, experience). The main sources of information for these areas are interviews with management and some employees, on-site inspections of business processes (production process or sales department) and conclusions drawn from the available data.

A satisfactory outcome of this analysis would be the conclusion that the risks arising from the organization of the enterprise are well managed.

The assessment of a client's financial situation provides information on their financial strength and hence on their capacity to meet their payment obligations towards the bank. It also assesses the capacity of clients to keep records of their business transactions that are adequate for the size and complexity of their business activity and to use them to manage their business properly and sustainably. The main

tool for deriving a conclusion on the client's financial situation is the analysis of the financial statements, i.e. the balance sheet, the profit and loss statement, and in certain cases, the cash flow statement. The cash flow statement is particularly useful when analyzing long-term credit exposures, businesses with high liquidity risks, and agricultural businesses. The assessment of a client's financial situation may be based on the following types of information (ProCredit Bank, 2020):

- audited financial statements (financial statements that are reviewed by an independent third-party audit company);
- published financial statements of the business client's enterprise which are submitted to government agencies;
- trial balances (with the end of calendar year) of the business client's enterprise which are not published yet, but whose consistency with the published financial statements can be confirmed;
- the client's internal financial statements, signed and (where applicable) stamped by the client, consisting of the key financial information as recorded in the internal bookkeeping of the client, reflecting a double-entry bookkeeping system, producing the output in the form of an income statement and balance sheet with a matching period covering a full financial year including end of year;
- a self-declaration form signed and stamped (where applicable) by the client, containing the key financial information regarding the client's business (self-declaration forms are defined as forms developed by the bank).

The nature and the quality of the information on which the analysis of the client's financial situation is based are of crucial importance for determining the creditworthiness of the client and accordingly the collateral that the client will be required to offer. As a matter of principle, the banks must be able to distinguish between standard documentation of financial statements and sub-standard documentation.

The assessment of payment capacity is based on understanding the financial strength of the business client in terms of their level of liquidity, profitability and

solvency, and on analyzing the risks to the financial strength that the client may face and they can manage them. In addition, the Business Client Advisor (BCA)/Credit Analyst has to draw a conclusion as to whether or not the client is exposed to foreign exchange risk, and if so, how the client manages this risk.

The liquidity of the business client's enterprise is to be assessed on the basis of:

- ratio analysis, using current ratio, acid (quick) ratio, ratio of turnover of accounts payable to turnover of accounts receivable, cash conversion cycle, net working capital;
- detecting the existence of dominant buyers or suppliers (i.e. entities that have a monopoly on the supply or the demand side) that can seriously affect the set terms of payment;
- cash flow analysis, where deemed necessary, in which the cash flow projection should answer the question of whether the client's planned investments are likely to have an adverse impact on their liquidity position;
- understanding the relationship between the client's operational cash flow and the instalments that would be payable on the proposed credit exposure, and assessing whether the client will be able to repay the proposed credit exposure and any still outstanding long-term credit facilities and interest for short-term working capital credit facilities from the profit or operational cash flow.

The profitability of the business client's enterprise is to be assessed on the basis of:

- ratio analysis, using return on equity, return on assets, analysis of gross and net margin, break-even margin;
- potential for debt repayment, understanding the relationship between the enterprise's net profit and all instalments for long-term credit and interest for short-term credit facilities;
- understanding and assessing the client's exposure to FX (lending) risk and its impact on the potential for debt repayment.

The solvency of the business client is to be assessed on the basis of:

- ratio analysis, using debt-to-equity ratio and equity-to-assets ratio;

- indebtedness of the client, by comparing the amount of the requested credit exposure with the client's current equity;
- projections of the development of equity (based on the projected balance sheet) and of profitability (based on the projected profit and loss statement);
- projected impact of the new investment on the client's balance sheet, profit and loss statement and cash flow.

A satisfactory outcome of the analysis of the financial situation of the client would be a conclusion that the business client is financially strong, i.e. profitable and solvent, with a strong liquidity position and satisfactory payment capacity, and is therefore creditworthy and able to repay the credit amount requested.

The total instalments due to ProCredit and other financial institutions (long-term instalment loans and interest for short-term instalment loans, overdrafts, credit lines, bullet repayment loans and credit cards) may not exceed 100% of the client's average monthly disposable funds (or operational cash flow, if applicable) or conservative projections of these amounts, if applicable.

Assessment of the project to be financed entails a clear understanding of the purpose of the requested credit exposure, i.e. whether it will be allocated to the needs of the existing business, to an expansion of the existing business, or to an expansion into a new business line or market.

Banks will only in exceptional cases provide financing for specific projects related to real estate development. The analysis of the project must also reveal the client's financial contribution to the project (typically 20%), the expected economic outcome of the project, and the time horizon for the completion/full operation of the project.

For projects that are to be finished in stages, information on the total expected costs, the expected timeline and the sources of funding for the project must be obtained by the bank and checked for their plausibility during the analysis process. The bank must ensure that the risk of the costs of a project exceeding the planned investment in a material way is managed (ProCredit Bank, 2020).

The main source of information for an analysis of the project to be financed is an interview with an owner and/or the management of the company, supported with documentation that confirms the intended use of the credit exposure (pro forma invoices, a simple business plan for investment, estimates for construction and refurbishing investments, Internet research of data provided by the client, etc.). Ideally, projections are to be drafted for the main financial positions, while for credits that are to be used for expanding into a new business line, the client must provide a simple business plan, giving supporting evidence to demonstrate that the planned project is financially sound.

A satisfactory outcome of this assessment would be a conclusion that the requested investment is well-grounded, reasonable and has a positive economic impact on the client's business activity.

If the client has a credit history with the bank and the other financial institutions, this analysis should focus on repayment behaviour during past or outstanding credit exposures as well as on the use of funds obtained from previous credit exposures.

A satisfactory outcome of this assessment would be the finding that the client has repaid previous and outstanding credit exposures in accordance with the respective payment plans with no significant delays and has made appropriate use of the funds.

The collateral requirements for credit exposures mainly depend on the risk classification and the maturity of the credit exposure.

The fair market value of each proposed item of collateral must be assessed by a professional appraiser, except for new standardized movable items, such as newly purchased vehicles, for which the market value can be determined on the basis of an invoice.

The assessment of the collateral must be checked by the Collateral Valuation Specialist. The Credit Committee decides on the composition of collateral items and their collateral value based on the fair market value as determined by the Collateral Valuation Specialist. The items purchased with the credit exposure (in particular real estate and long-term assets) should serve as collateral for the credit exposure. The

Credit Committee may decide to request the professional valuation of a collateral item if the valuation presented to it does not appear to reflect the true value of the item. The collateral items and their collateral value must be clearly stated in the credit exposure decision document issued by the Credit Committee (ProCredit Bank, 2020).

In cases where the bank accepts personal guarantors who have been nominated, the BCA should check the extent to which each personal guarantor has a regular stream of income that can support the debt and/or possesses private property/personal belongings that may be regarded as a sound backup for the credit exposure in question.

The legal opinion must take the form of a legal check performed either by the BCA or by a lawyer or a staff member of the Legal Department with the relevant competence and experience. This individual checks whether the business is duly registered, whether the client is duly authorized to conduct the requested credit transaction with the bank, and whether the ownership documents relating to the collateral offered are in accordance with the requirements. Only if all such legal and formal requirements are met may the BCA issue a positive vote on the credit exposure. If any legal issues arise which appear to be particularly important for an accurate assessment of the business and/or the collateral, but in regard to which the BCA is not able or qualified to pass judgement, he/she may seek support or advice from the bank's legal staff and may even ask them to provide a formal legal opinion (ProCredit Bank, 2020).

A legal opinion must be obtained for each Upper Small and Medium credit exposure.

Each bank of the group has its own legal opinion format. At a minimum, it must consist of (ProCredit Bank, 2020):

- a compliance analysis, i.e. an analysis of whether the business client's enterprise is in compliance with the local regulations regarding business registration and an analysis to ensure that the management is duly authorized to conduct credit transactions with the bank on behalf of the company;
- analysis of the legal aspects of collateral; it must clearly state whether the proposed collateral is satisfactory for the bank, i.e. whether it is in accordance

with the legal requirements stipulated in the Group Collateral Valuation Policy and the bank's internal procedures that further regulate collateral issues;

- other aspects required by the Credit Committee.

The credit exposure decision is based on the following four criteria:

- a) Reliability, reputation and stability of the business client: the result of the BCA's and (if applicable) the CRO's/Credit Analyst's assessment of the business client's profile and of how well the business client mitigates business risk, management risk, organizational risk, market risk and political and legal risk. This is supported by the credit history of the client with the bank and other financial institutions and the level of payment business that the business client's enterprise conducts via the bank (a.k.a. the Hausbank principle, which entails that clients use the services that the banks provide; have an exposure and turnover with the bank; and use the credit facilities appropriately; from the side of the bank, the principle involves building a clear and long-term vision of cooperation and a long-term relationship with the client). This is also supported by the financial performance of the client and decisions made in the past and is also supported by the legal history (potential legal disputes initiated against the client). The result of the risk classification is mandatory and crucial and must be critically assessed and taken into consideration.
- b) Payment capacity: the result of the BCA's (for Small credit exposures) and Credit Analyst's (for Medium credit exposures) assessment on whether the client is able to repay their debt.
- c) Collateral: the degree of collateral coverage, based on the outcome of the assessment of the company (qualitative and quantitative analysis), based on the available collateral, which must be checked to ensure that, in terms of composition and valuation.
- d) Business potential: the client's needs apart from or complementary to the current request and potential future business with the bank.

ProCredit banks focus on providing straightforward banking services to small and medium enterprises and private individuals. The banks aim to foster widespread

participation in the formal financial sector in order to contribute to building a stable economy. Access to responsible credits supports the expansion of small and medium businesses, which in turn drives economic growth and employment. Providing transparent banking services to SMEs in a responsible way is therefore a development priority. At the same time, ensuring that the economic development that we support is as environmentally and socially sustainable as possible is a central component of the development mission of the ProCredit group.

Each credit facility issued to business clients is assigned to individual environmental risk categories. The risk categorization is based on a classification of the potential adverse future environmental risks and impacts posed by a client's activity or by any activity being financed or expected to be financed (ProCredit Bank, 2020):

- Low risk: The client's activities have minimal or no adverse environmental risks and impacts associated with them. By default, no environmental assessment is required upon application for any credit facility unless for high exposures as defined in this document.
- Medium risk: The client's activities have limited adverse environmental risks and impacts, and these are capable of being readily prevented or mitigated through technically and financially feasible measures.
- High risk: The client's activities may give rise to significant or long-term adverse environmental risks and impacts and the client may not have the technical or financial means to manage them.

Since reliable information on all potential adverse environmental risks and impacts of a specific activity are rarely available, the activity's environmental risk category is determined by default based on risks inherent to the particular sector and the context of the activity. Proposed environmental risk classification for different economic sectors is given in Annex D.

All clients, regardless of the size of their exposure or their environmental risk category, are subject to a social assessment. The bank staff member responsible for conducting the social assessment shall consider several social aspects related to the

management of the overall social risks of the client's activities. The main purpose of the social assessment is to understand how a client generally treats its employees within a social context.

The responsible staff member shall assess the social aspects with regard to the client's general working and employment conditions and practices. The assessment shall focus on the aspects that may not be (fully) in compliance with local laws/regulations and/or not in line with market standards, or on habits/practices that appear to give rise to unfair or unsatisfactory treatment of the employees, which could potentially result in a legal, regulatory or financial risk for the client, and thus pose a credit risk for the bank.

There are several areas to consider when conducting an assessment, as explained below (ProCredit Bank, 2020):

**Social conditions:** Are working times clearly defined and adhered to? Is staff turnover at an acceptable level for this type of company? If staff turnover is high, what are the reasons for this? Working times should be within what is defined in the regulatory framework in order to maintain employees' health and motivation as well as to avoid fines. A high level of staff turnover is a sign of unsatisfied employees and an unstable business. The reasons for the turnover should be investigated because in some sectors a high level of staff turnover can lead to temporary stoppages or decreases in production/services if highly qualified staff are needed but cannot be found or trained quickly enough.

**Qualification:** What is the qualification level of the employees; is it appropriate for their functions? Is regular training necessary and provided? Unqualified employees may pose a risk to the quality of production/services and the reputation of the company. Some positions require regular trainings and eventually certifications, e.g. for hygiene standards in the food industry. The actions of uncertified/untrained personnel may lead to fines or periodic closures of the company. At the same time, improper handling of dangerous substances or equipment may pose a threat to the well-being of employees or even cause serious injuries.

Health conditions: Are working areas well lit and clean? Are rest areas and sanitation facilities offered? Some businesses require work camps and portable toilets. Do these comply with proper standards and are they well maintained?

Working areas need to be lit according to recognized standards in order to avoid health problems and/or accidents. Sanitation facilities are recognized as a prerequisite for proper hygienic conditions and rest areas may be required by law for certain industries, such as laboratories or stores.

Safety conditions: Are fire extinguishers in place and visible? Are emergency exits properly marked and accessible? Are potential hazards, such as tripping, slipping, drowning and falling, working at height, clearly marked?

All companies are required to have fire-fighting equipment on their premises to protect the health and safety of their employees and to reduce the likelihood of property damage. As with emergency exits, fire extinguishers should be highly visible and appropriately labeled, and employees should be trained to use them. Last but not least, emergency exits must be unobstructed at all times.

Impact on the community: Is there any existing negative impact on the community or is there likely to be a negative impact in the future? For instance: conflicts over land or resources like water; nuisances such as noise; dismissal of a large number of employees living in the community, etc.?

Many business activities can have a serious negative impact on the community (e.g. the odours caused by a waste treatment plant). In the worst-case scenario, a community that has a negative attitude towards a client can lead to the closure of the business due to public protests, bad press or boycotts.

Hygienic conditions (especially for businesses active in the food supply chain): Does the company have hygiene standards in place? Are hygiene supplies provided and are signs in place encouraging staff to wash their hands?

Good hygienic conditions are a basic requirement for companies in the food industry. Unhygienic conditions can lead to the outbreak of disease or illness among customers and employees, resulting in reputational damage and even the eventual closure of the business. If the business has a HACCP (hazard analysis and critical

control points) system in place, it demonstrates that the client is aware of food safety and is taking measures to minimize the risk of unsafe practices and food contamination.

A standard Environmental Risk Assessment is carried out, for the activity to be financed as well as for all other relevant activities of the client, with Small or Medium exposures, entailing medium or high environmental risk. All the standards of reviewing business must be in comply with ProCredit Holding's shareholder requirements, whereby the ProCredit banks are obliged to (ProCredit Bank, 2020):

- commit to financing environmentally and socially sustainable projects,
- ensure that their clients comply with existing and applicable local laws and regulations concerning environmental protection, health and safety,
- refrain from lending to clients who engage in activities that, if financed, would pose a reputational or ethical dilemma for the bank and/or its shareholders, and from engaging in such activities themselves,
- monitor their performance against these objectives, and
- report on their performance, measured against these objectives, on an annual basis.

Regarding environmental assessment, following issues are to be taken to consideration when visiting business premises:

**Past incidents.** Prior to visit, check whether any incidents have been reported about the company. Collect details about past incidents. Check documentation and determine whether the cause has been eliminated.

**Location.** Residential and mixed-use areas may increase risks to the production/operation area due to potential nuisances and trespassers.

**Odours/Air quality.** Odours and air quality are a frequent cause of complaints and have an impact on the workers' health. If to recognize any odd smells, heat or dust, try to locate them and inquire to which extent this is normal. Attention should be paid to ventilation systems and filters. Also, try to determine how chemical flues and exhaust gases are managed.

Noise/Vibration. Noise is mainly produced in areas with machines. Are workers protected? What is the impact outside of the plant? Big machinery should have vibration limitation devices.

Tidiness/waste. Are the production/working area and the surroundings clean, free of waste and effluents, and well maintained? Are walls and machines covered with dust? Is waste stored in secure containers? If effluents are in evidence during the review process, pay particular attention to how waste water is managed.

Physical hazards. Are personnel trained enough to operate machinery? Do personnel have proper safety devices (e.g. helmets, respiratory protection, gloves, safety boots, etc)? Do there exist emergency stop switches are within reach of operating stations? Do switch-off systems and mechanical brakes are used to stop machines when workers are too close to revolving parts/blades? Do tanks, lagoons and pits are properly fenced off?

Condition of machinery. Does machinery appear to be well maintained?

As a development-oriented banking group, ProCredit Bank operates in countries where businesses are not always required to meet high environmental and social standards. In this way, Bank not only makes sure that clients comply with the law; we also carefully assess the risks associated with their production processes and production site. For ProCredit the implementation of social and environmental standards is part of a responsible business model. This applies to lending operations and is part of day-to-day work. In order to avoid and effectively manage any potentially negative impacts on society, decrease our social environment or our ecological footprint, the bank has developed a clear environmental management system across all banks of the ProCredit group.

### 2.3. The risk classification system as a crucial instrument for supporting the credit assessment

The bank's client classification system is based on qualitative and quantitative criteria for the company divided into eight areas. In each area, the client is assigned to one of eight risk categories.

The quantitative factors in the risk classification system (accounting for 60% of the client risk classification) are the operating performance of the business client's enterprise, balance sheet strength, and cash flow quality.

The analysis of the qualitative factors (which account for 40% of the client risk classification) is subdivided into the following areas: people associated with the business client (management, key staff, owners); the professionalism of the organization; the quality of the documentation provided; external factors and their potential impact on the business client's activity; as well as any warning signs, i.e. information which is indicative of payment difficulties on the part of the client in the recent past and which is also available to the bank in a measurable and quantifiable form.

The following sections describe the general guidelines for each criterion (ProCredit Bank, 2020):

Client supplier and customer dependency. The performance of each company is strongly related to the customer and supplier structure of the activity. Customers are the main source of revenues and liquidity. The company is therefore highly dependent on the customer needs, demand and concentration. Risk related to customers can be high if there is a high concentration on one or two individual customers, but can also be low if customers are randomly spread and high in number. The more concentrated the customer base, the more the client needs to ensure that his products and relationship with the customer is stable. The same applies for suppliers. High risk can come from a concentration of suppliers who can unilaterally change the price or supply levels based on their performance which then has to be passed on to the end-users. A well-diversified suppliers structure has lower risk as individual suppliers can

easily be replaced and additional costs are low if any changes occur in their business model.

Client and supplier structures are equally important for both Small and Medium business clients.

Sector risk. In the long run, almost every business is exposed to business cycles and the overall economic situation in the respective sector. Demand for products/services is volatile and depends on whether products are a basic necessity or are a non-essential commodity that can be substituted easily. Sector risk also comes from competitive rivalry (market structure, key players, industry life cycle) and technological risk.

Sector risk is also dependent on macroeconomic developments and the political situation in the country. Typically, industries with an increased risk include transport, construction and sectors subject to special privileges such as reduced tariffs or taxes, while wholesale and retail of basic nutrition tend to be stable.

In all cases, when undertaking a sector analysis or preparing the sector risk assessment, all available forward-looking information, as well as the macroeconomic environment and outlook, must always be considered, if applicable. Checking out the following factors, among others, should help the specialist obtain a good idea of the sector risk:

Structure of the sector:

- Threat of losing business to new market entrants (e.g. will foreign competitors enter the market in the near future?);
- Risks due to international integration;
- Structure of the competition in the market;
- Customer/ supplier structure in the sector;
- Situation regarding the use of strategic resources;
- Are customer needs adequately covered/satisfied;
- Stability of the demand side.

Regulatory framework:

- Legislative changes affecting the industry;

- Requirements for licenses and permits affecting the industry;
- Changes in tax and import/export fees;
- Possible import export bans;
- Production aligned with legislation;
- Dependency on subsidies and other governmental support mechanisms.

Economy and growth:

- Might macroeconomic developments influence the client's market (will customers tend to spend less money on goods/services offered by the client in the event of an economic downturn?);
- Average profitability of the sector;
- Usage of the existing production capacity in the sector;
- Dependency on economic trends (GDP development, interest rates, unemployment rates, etc.);
- Expected outlook for the industry (trends, industry growth expectations, market potential, etc.).

Technological changes:

- Market technology risks, (do players regularly need to update machinery and equipment to remain competitive?);
- Speed of technological changes in the sector;
- Relevance of research and development for the sector.

If any deterioration of prospects is expected for a specific sector, it is the responsibility of back-office to update the sector analysis/risk assessment.

Macroeconomic environment. The second element that should be assessed in the risk classification is the company's reliance on the country's macroeconomic development. This variable measures the vulnerability of the sectors in which the client operates to changes in the economy. In the long run, almost every business is exposed to business cycles and the overall economic situation in the respective market. It is important to assess how much the company's financial performance

stability depends on macroeconomic developments and how fast it will be affected by such macroeconomic changes.

Examples: For basic food products in particular (sugar, salt, potatoes, rice, etc.) one can assume that demand is more or less constant, independent of the economic situation. Macroeconomic developments affect products and services that are exposed to substitution; e.g. during a crisis, the private transportation sector (taxis) might suffer, as many clients will switch to public transport to save money.

Business sectors with a high dependence on macroeconomic developments may include construction companies, hotels, restaurants and, to a lesser extent, textile shops and recreation centers. Not only is the product or business sector of great importance for this criterion, but also the customer structure. If the majority of customers consist of state or public authorities that are dependent on a budget or other management decisions, a certain level of reliance on macroeconomic development must be assumed.

Market positioning, competitive advantage and entry barriers. The market positioning and competitive advantages of a business are essential for its overall financial situation and long-term payment capacity. The assessment of this criterion provides information about the performance in the market and the ability of the client to adjust to changes that can affect business operations. In addition, in order to give a forward-looking perspective to the assessment of the company's market positioning and competitive advantages, it is necessary to assess entry barriers in the industry where the client operates including any associated consequences.

The market position is mainly affected by the company's overall marketing mix (price, product, distribution, promotion, individual factors or a combination thereof) as well as its ability to adjust quickly to changes in the market and to define its capacity to maintain or even increase its market share. Generally, the market position can be assessed by market share, i.e. current number of customers (or sales) divided by the potential in the respective market. Ideally, both the absolute number and the share should remain constant or increase over time. A constant share in combination with a decreasing number indicates a general downturn in the market. However, market

share is much easier to define for Medium clients than for Small clients. In such cases, it is important to consider another aspect that helps determine the client's market position. E.g. the client's success in influencing its customers so that the company occupies a clear, unique and advantageous position in the customers' minds (ability to change prices without losing customers, customer loyalty, etc. are possible examples of a good market positioning of the client).

There are many types of competitive advantage. They can range from pricing to special know-how, quality to experience and geographic coverage. It is important to understand that a competitive advantage can keep a client ahead of its competitors for a longer period, it is hard to imitate and unlikely to become irrelevant in the short term. In this regard, competitive advantages, or unique selling points, are the basis for customer preference and help keep potential new entrants out of the market. Equally, the analysis should also consider competitive disadvantages, i.e. relevant shortfalls in comparison to business rivals.

Entry barriers reflect the difficulty faced by competitors wishing to enter the markets in which our clients operate. Low entry barriers are one of the main threats for a company since the level of competition can change rapidly and thereby negatively affect sales and margins. Entry barriers can be assessed by considering different aspects that directly or indirectly affect the company, such as government regulations and interventions that can protect the client's position or threaten it by making the market more liberal; patents and/or proprietary knowledge and the difficulty of acquiring these can also protect the client's position; brand recognition or restricted distribution channels can also be used to determine entry barriers. In addition to legal and regulatory obstacles, there are many other micro-economic issues to be considered, including but not limited to:

- Scope of investments – for production sectors in particular, huge investments are necessary before entering the market;
- Labour market – if entering a market requires the recruitment of a specialized workforce (e.g. scientists, specialized salespeople, engineers) and the targeted market lacks this workforce, a significant limitation exists;

- Product market – it is difficult for a competitor to make investments in and enter a highly saturated market due to the variety of products already available. After assessing all elements of the industry in which the client operates, the entry barriers can be determined and defined as low or high.

Management and organization structure. It is essential for clients to have clear and comprehensive future predictions and planning since this an important determinant for the future success of the business. The owner/manager of the company must have a vision of the development of the business in both the short and long term. Therefore, this is a key element of the credit analysis process.

In order to assess the client's predictions and planning, the long- and short-term plans for developing the business need to be considered. Strategies need to be feasible, both in technical and economic terms and should focus on maintaining or improving the business position with regard to sales/profit growth, outreach, diversification or similar. Moreover, the client needs to show that he/she has reasonable assumptions about future market developments and has plans on how to react appropriately.

Ideally, a client is able to outline a holistic strategy that includes suitable plans for both short- and long-term business development. Clients should at least be able to demonstrate reasonable short-term measures, implying that they are informed and prepared to react to current market developments, even if not planning for long-term eventualities. In addition to such information, the ability to plan for such scenarios is a strong indicator for a company's stable development. A client who plans for different scenarios is less vulnerable to sudden changes in the market and in this way can ensure that the company's performance remains stable. Clients who either lack a consistent strategy or present completely unrealistic plans constitute a high risk, as they tend to miss out on market changes and fall behind competitors.

Factors that should be considered when assessing a client's business plans:

- What developments have there been in the markets in which the client operates and what was the client's reaction to these developments?
- Which position does the client have in these markets? Is the client aware of the competitive advantages/disadvantages and how they affect the future market

position? How will the client meet increased customer demand and acquire new customers?

- What economic risks might the client face in the coming years?
  - What regulatory changes are likely to take place that could affect the client's business?

Client's way of communication/ cooperation. Clients operate in an environment with many different stakeholders, such as employees, customers, suppliers, authorities, banks, etc. The ability to interact well with these parties plays a key role in the success of the business. As the accuracy of the business analysis is strongly dependent on obtaining reliable data, the client's communication with the bank is of particular importance for ProCredit. This includes not only the relationship with the client's BCA but also the overall communication with other staff such as branch management, credit risk officers, etc. Therefore, the higher the client's level of cooperation in terms of transparency and pro-activeness in providing data, the higher the degree of certainty in the analysis and the shorter the processing time for requests. Clients who hesitate or possibly even refuse to provide information are unlikely to be interested in a mutual, trusting business relationship.

Risk management and controlling. A well-functioning, sustainable risk management approach has a major influence on the profit and loss statement, balance sheet and the general stability and long-term success of a business. It is necessary to assess whether the client has identified and quantified potential short-term risks and whether measures have been prepared to counter such risks. A good risk management approach has to target potential risks even if they are not considered to be imminent, including but not limited to:

- Sudden changes in market prices affecting sales and purchases
- Disasters, such as fires or natural disasters (e.g. earthquakes or floods)
- Loss of key customers/suppliers/employees
- Fraud, robbery, etc.

Possible counter-measures may include:

- Passing on cost increases to customers 1:1

- Concluding insurance agreements
- Diversifying customers and suppliers
- Adequate organizational structure
- Employing security staff, etc.

The more detailed the clients' identification and monitoring of risks, the more quickly they can react and mitigate possible impacts to their financial situation. All clients are exposed to some degree of risk. Checking key points becomes more important for the prevention of any shortcomings, which can be a concentration of individual customers and suppliers, changes in liquidity buffers, inadequate provisioning, and changes in technology, FX risk etc. Checking such key points is particularly significant for companies involved in production and where management has to focus on product quality. However, checks are also important in other sectors, especially as the company grows and increases the number of employees. Good risk management and effective checks ensure that the company will run smoothly in a wide variety of situations.

Experience and management skills of key staff. The owner's business skills in terms of planning, executing the company's strategy, knowing the market, organizing and coordinating resources, establishing business relationships with key customers and suppliers as well as technical skills are crucial for the performance of any business. The ability to make fast appropriate decisions, versus slow or no decision making, is significant for the survival of a company. This is especially true because in the markets we operate in, the management of businesses typically depends on a very small number of people. Their managerial skills, gained from experience, are an important factor when differentiating better performing clients from potentially less well-performing clients. Therefore, managerial capacity and decision-making ability, along with experience, are closely linked to performance and hence to the repayment ability of the clients.

Succession planning/back-up. The majority of Small and Medium clients are companies owned and managed by a single person. For such clients, the going-concern assessment often depends on the succession in ownership and management

and the general willingness of the identified successor to continue the business. In many cases, a successor will be selected from within the family. Furthermore, the existence of back-up staff (not necessarily a successor) is crucial for any business. It is important to evaluate the succession plan/ back-up plan, the current situation and also the bank's impression of the designated successor(s).

Nevertheless, in the short term, the way decisions are made within the company also needs to be assessed. In companies that depend on a single person, the owner often delegates decision making on daily operational tasks to one or more key managers/staff, which facilitates the smooth running of the business even if the owner is not involved on a daily basis. Therefore, for the classification of succession planning/back-up, two factors should be considered: short-term performance (daily operational tasks) and long term vision of the company (strategic decisions).

Credit history with PCB. Payment behaviour is of particular importance when assessing client risk. As past behaviour often predicts future behaviour, the client's payment history with PCB is assigned a significant weight in the overall risk classification. Therefore, correct and consistent calculation is very important for the risk classification.

The maximum number of days in arrears per month is added up (contamination principle) and divided by the number of months due in the respective period. When calculating arrears, banks does not focus on the end of the month but on the highest level of arrears within each month.

Credit history with other financial institutions. The client's relationship with other financial institutions must also be taken into account. For the respective calculation, the same logic applies as specified above for the category "arrears with PCB". The respective data for other financial institutions can be gathered from account statements, credit bureau entries, bank inquiries, the client's bookkeeping records, etc.

Payment history with counterparties. Payment history with counterparties is relevant when the client has no credit history with other banks. It is also important when assessing the client's relationship with suppliers and other third parties (tax

office, customs, etc.) which can create significant problems for the company at any time (blockage of accounts, loss of significant suppliers, etc.)

For any creditor, payment behaviour and the capacity of the client to repay his or her debts are of crucial importance. Clients demonstrating poor payment behaviour towards other creditors might also indicate future problems for the bank. Poor payment behaviour can also result in a strained relationship with suppliers and hence create reputational problems for the client. Therefore, it is important to understand the rationale behind overdue payables, which might include:

- Tight liquidity
- Unwillingness to pay
- Administrative shortcomings, e.g. inadequate accounting know-how

#### Client classification – Quantitative

The selection of each criterion is backed up by numbers and is based on analysis of financial statements (Eqs. 2.1 – 2.6).

The current ratio offers valuable information about the liquidity situation of a company. From a credit risk perspective, a company should always be in a position to quickly repay all short-term liabilities. At the same time, this ratio shows whether the client has properly financed his or her assets (i.e. current assets are financed with current liabilities). Following this logic, the client's short-term assets should ideally exceed his or her respective short-term debt. The higher this ratio is, the lower the risk of liquidity difficulties. Non-realizable assets, e.g. bad receivables and/or outdated inventory, are not included in the calculation.

$$\text{current ratio} = \frac{\text{short-term assets}}{\text{short-term liabilities}} \quad (1.1)$$

The ratio measures the efficient use of assets by the company. ROAA shows the annual profit per unit of average assets. It is calculated by dividing the company's annual profit by its average assets (current and previous year). The higher this ratio, the more efficiently the firm uses its equity and borrowed funds.

$$\text{return on average assets} = \frac{\text{yearly net profit}}{\text{average total assets}} \quad (2.2)$$

Growth in sales is a good indicator of the acceptance of our client's products/services and management abilities as well as of the overall development of the market. Therefore, we can conclude that the higher the sales growth, the better the economic situation of our client. In contrast, if our client is experiencing a decline in sales, he or she is likely to face serious liquidity and profitability problems in the near future. To determine this rating at any given time, sales from the last 12 months are compared to those from the previous 12 months, e.g. sales figures from October 2019 until September 2020 would be compared with those from October 2018 until September 2019.

$$\begin{aligned} & \text{sales growth} \\ = & \frac{\text{current sales (current year)} - \text{previous sales (last year)}}{\text{previous sales (last year)}} \end{aligned} \quad (2.3)$$

Projected debt service capacity (stressed for FX risk if case). The ability of that company to cover liabilities and payment demands which derive from the financing agreements is of core importance and therefore is given the highest weighting in the overall risk classification compared to the other criteria. In order to assess the future payment capacity of the client, the ratio of projected debt service capacity (when applicable, stress-tested for FX risk) should be considered. When determining the input parameter for the calculation of the future expected projected debt service capacity of the client, it is important to take the macroeconomic development into consideration. This means that forward-looking information regarding macroeconomic variables such as projected GDP growth, unemployment rate, interest rates, etc. is to be considered and their potential impact on the financial performance of client needs is reflected in the projected debt service capacity.

The best option is to use projected cash-flow (stress-tested for FX risk when applicable) and the demand for payment of liabilities towards financial institutions in the future period (usually next 12 months). The formula to be used in this case is:

$$\begin{aligned} & \text{Projected debt service capacity} = \\ & \frac{\text{Projected operational cash-Flow (stress tested for FX risk)}}{\text{Total payments toward the bank (according to the facilities agreements and payment plan)}} \end{aligned} \quad (2.4)$$

The projected operational cash-flow can be derived by using a simple annualized direct (Table 2.3) or indirect cash-flow (Table 2.3) as described below, or (e.g. if the client is subject to major seasonality, or faced with a complex investment plan where it is important to understand the monthly development of the cash-flow) by using a detailed monthly cash-flow.

Table 2.3

Projected direct cash-flow	
	Expected Sales
	Expected (+/-) $\Delta$ receivables
	Expected (+/-) $\Delta$ advance payments from clients
	<u>Total cash from customers (1)</u>
	Expected Cost of goods sold
	Expected (+/-) $\Delta$ advance payments to suppliers
	Expected (+/-) $\Delta$ suppliers
	Expected (+/-) $\Delta$ inventories
	Expected operative expenses
	Expected taxes to be paid
	<u>Total expected outflows from operative activities (2)</u>
	<u>Total expected cash-flow operating activity (3) = (1) – (2)</u>

Source: ProCredit Bank (2020).

The direct method is one of two accounting treatments used to generate a cash flow statement. The statement of cash flows direct method uses actual cash inflows and outflows from the company's operations, instead of modifying the operating section from accrual accounting to a cash basis (Investopedia, 2020).

Table 2.4

Projected indirect cash-flow	
	Expected profit
	+ expected interest
	+ expected depreciation

Table 2.4 Continued

<u>EBIDA (1)</u>
Expected (+/-) $\Delta$ receivables
Expected (+/-) $\Delta$ advance payments from clients
Expected (+/-) $\Delta$ advance payments to suppliers
Expected (+/-) $\Delta$ suppliers
Expected (+/-) $\Delta$ inventories
Expected taxes
<u>Total expected change in working capital and taxes (2)</u>
<u>Total expected cash-flow operating activity (3) = (1) – (2)</u>

Source: ProCredit Bank (2020).

The indirect method is one of two methods for preparing the cash flow statement. Under the indirect method, the cash flow statement begins with net income on an accrual basis and subsequently adds and subtracts non-cash items to reconcile to actual cash flows from operations (Investopedia, 2020).

In all cases, full use of the approved credit limit within the conditions should be considered. Furthermore, in cases where the owner/manager of the business pays themselves no salary or a salary that does not cover family expenses, then these must also be incorporated in the expenses side and therefore reflected in the cash-flow from operating activities. The same applies in the case of investments that are financed by the operational cash-flow of the company.

If the ratio is below 1 (100%), it shows that loan obligations cannot be repaid by business profits alone.

The Projected Debt Service Capacity Ratio, which is used during the decision-making process is also used for risk classification purposes. However, if the long-term debt service capacity is better than the short-term payment capacity (for the next 12 months) then the lower short-term payment capacity is used.

If selecting the projected debt service coverage ratio option of “below 1 but not less than 0.9 with buffer” a conservative approach should be used. The buffer refers to the fast sale of highly liquid fixed assets, available cash, etc., which can be used to

repay loans to the bank. When taking such inflows into account, the payment capacity must be given (projected debt service capacity of at least 1).

Debt over EBIDA. This ratio shows the debt level the company is bearing in relation to its P&L results. Total debt (with financial institutions)/ EBIDA will provide the approximate time the borrower needs to pay back its current debt. A declining debt/EBIDA ratio implies the company is paying off its debt and/or growing earnings. Likewise, an increasing debt/EBIDA ratio means the company is increasing debt more than earnings. A ratio lower than 3 indicates a normal financial state; however, a ratio higher than 4 or 5 a high level of debts.

$$\text{Debt over EBIDA} = \frac{\text{Total debt (toward financial institution)}}{\text{EBIDA}} \quad (2.5)$$

Total debt comprises all potential usage of credit limits (full disbursement) under specified conditions in the approval document. The expected future EBIDA (based on prudent assumptions) should be taken into consideration for the calculation.

Equity over asset ratio (after disbursement). Equity is the value of total assets minus the value of total liabilities. If the equity ratio is above zero, liquidating all assets will bring in more money than is needed to repay all debt. Therefore, the stronger an enterprise's equity base is, the lower the likelihood of long-term solvency/payment problems. To calculate the formula, total assets and equity should be considered after disbursement.

$$\text{Equity over asset ratio (after disbursement)} = \frac{\text{Total equity}}{\text{Total asset}} \quad (2.6)$$

Equity and total assets should take into account all possible loans disbursed within the credit limit under fulfillment of certain conditions as stipulated in the approval document.

The risk classification system for Small and Medium credit exposures is an instrument that supports the credit risk assessment for proposed loans and the ongoing assessment of the risk associated with outstanding loans. It supports the decision-making process by supplementing the creditworthiness assessment of all Small and Medium credit exposures. When working with Small and Medium business

clients, it is common to come across situations where there are groups of related parties.

Rules for the risk classification in cases of groups of related parties are the same as described for the credit risk analysis of borrower units and groups of connected clients. In the case of connected parties, this requires that an individual risk classification is to be performed for each entity undergoing financial analysis and in order to obtain the overall risk classification for the group, the results are consolidated and the worst or most contaminated risk classification level is applied.

The risk classification system is based on the key elements that the banks have to consider when assessing a credit exposure. It is focused on qualitative and quantitative criteria which are combined and weighted based on our long experience working with SME clients. Nevertheless, the risk classification system cannot always represent all the individual risks associated with each specific client. This means that in certain cases, there may be additional risk factors that significantly affect the creditworthiness of the client and which might not be (fully) reflected in the outcome of the risk classification template. Or there might be specific risk factor(s) that potentially have a much more significant influence on the creditworthiness as represented by the weighting in the risk classification system. Therefore, the risk class obtained by the model can be manually overruled, if deemed appropriate; however, if manually overruled, only a higher risk class (worse) than that calculated by the risk classification template can be applied. Furthermore, the argumentation for manually overruling the risk classification must be fully documented.

### CHAPTER 3

## PROBLEM ASPECTS OF ASSESSING THE CREDITWORTHINESS OF BORROWERS AND WAYS OF ITS IMPROVEMENT

Modern trends in the development of the national credit system facilitate to the fact that the process of forming credit policy at the micro and macro level is always influenced by a number of contextual factors, which, besides, is characterized by some retrospective, historical nature.

The inconsistency of interests and sources of problems was laid during the crisis of 2008-2009, when the inefficiency and imperfection of the system of assessing the creditworthiness of borrowers, both individuals and legal entities, led to significant problems with the payment of not only notorious foreign currency loans but also sharpened the gaps between the payment of ordinary loans in the national currency. At the same time, we should add to this the problems with a comprehensive assessment of the creditworthiness of large enterprises that received soft loans from leading Ukrainian banks secured by government securities.

At that time, the situation with the formation of bank reserves on active operations of Ukrainian banks was equally threatening, when many banking institutions due to lack of proper quality control by the National Bank allowed a catastrophic decline, or even complete non-compliance and, consequently, internal credit risk was increased.

After the rapid growth of consumer lending, its pace began to decline en masse, there appeared new "gaps" in the prospects for repayment of loans, as the economic crisis contributed to rising unemployment and the loss of many borrower's jobs. Hence, the question of quality of the process of considering loan applications, direct communication with borrowers and competency of credit specialists came up. It has been possible to stabilize the fall in loans granting to the real sector and the household sector only last 3-4 years.

Since then, the domestic system has rapidly response to changes in the credit sector and undergone various modifications, and many Ukrainian banks have contributed to the modernization of their own credit scoring systems and rating of borrowers. This applies in particular to such banks as Privatbank, FUIB, Alfa-Bank, Ukrsibbank, etc. However, in small banks, the problem remains unresolved. The tendencies to improve the credit rating system are evidenced by changes in the work of credit centers, and improving communication with potential borrowers and improving the content of the main sources of information support of the loan process: questionnaires and business plans for corporates (Pravlinnya Natsional'noho banku Ukrayiny, 2020).

Therefore, in such economic conditions, banking experts in lending, investment activities need to have sufficient knowledge and skills needed to identify and assess current trends in financial and economic situation of the future borrower, holistic forecasting of their dynamics, as well as choosing the most appropriate credit product for the borrower. In practice, the implementation of constant contact with the client is very difficult.

It should be borne in mind that in the case of a systematic incorrect analysis of the creditworthiness of borrowers, there may be significant problems with the deterioration of the total loan portfolio of the bank, which can only lead to excessive use of bank reserves (Skochelyas, 2019)

As for the new progressive method of creditworthiness analysis of the borrower-legal entity, which is currently actively implemented by the NBU is characterized by many shortcomings: analysis of the financial situation of a potential borrower is not fully conducting, as significant number of adjustment factors are not taken into account, too much attention is given to valuation and realization of collateral and, generally, all the recommendations are mostly technical.

For national realities, a very big problem is the incomparability of balance sheets of enterprises by timing, type of reporting, the need for consolidated or combined reporting, etc., and it often happens that enterprises and financial statements in reality do not reflect the current situation. Overcoming such national practice

should become one of the priorities of the Ministry of Finance of Ukraine, the State Fiscal Service and other control and audit bodies of our state.

Another critical problem is that many domestic companies in order to minimize expenses and avoid taxation, use financial schemes and reach out to third-parties using their services in such a way that the real picture is often quite different from the officially reported. Moreover, companies often to some extent "think up" non-existent results, so that at the time of obtaining a loan the situation at the company was as close as possible to ideal.

In general, the current practice of credit relations leaves much to be desired. It is worth mentioning that the practice of on-site analytical inspections is not very popular today. However, it could more accurately and qualitatively assess the quality factors, scale of production, level of management and future development opportunities of the enterprise. This creates the conditions for assessing the condition of fixed assets and its availability, liquidity and real value of collateral for future loans and more.

Many domestic scientists propose a solution to the problem of shortcomings of the imperfection of borrower's creditworthiness assessment. For instance, introduction of a comprehensive method of assessing the creditworthiness of the enterprise, consisting of 9 financial ratios, which can become the basis for the rapid assessment for the bank, was proposed by L.L. Gritsenko. The author included the following ratios to the method: coverage ratio, collateral coverage ratio, profitability, autonomy ratio, net working capital ratio, turnover ratio of receivables and payables and goods, and margin ratio.

L. Zhyravel proposed to apply mathematical criteria in modern methods of assessing the creditworthiness of the borrower, using statistical criteria of Laplace, Bayes and Savage when using MS Excel and Borland Delphi 7. The use of mathematical criteria minimizes credit risks regarding creditworthiness of borrowers. (Zhytar, 2019).

O.S. Kryvokin substantiates the method of values comparison. The author proposed to determine financial state of the borrower by comparing the calculated

coefficients and indicators with their optimal values (establishing compliance with the optimal trends). To calculate the forecast assessment of the borrower's creditworthiness, it is necessary to analyze the identified trends in turnover and profitability of the enterprise (Zhuravel', 2011)

Thus, we can say that most domestic scientists consider indicators of liquidity, profitability and efficiency more important. However, their opinions diverge further, because some prefer indicators of financial stability, and others - indicators of business activity. The authors also propose to study other indicators and coefficients, such as current assets to equity ratio, net working capital adequacy. Business reputation and position on the market are considered by S.M. Ilyasov and A.S. Proskurova are important in assessing the creditworthiness of the borrower.

It would be expedient for the National Bank of Ukraine to set up a joint working group with commercial banks to discuss the solution of existing problem in banking sphere, in particular the system of assessing the creditworthiness of borrowers.

Taking into account the features presented in the study of the operation of foreign credit rating systems of the borrower, we believe that it would be appropriate to disclose the following information for a more detailed assessment of the potential client: submission of real ownership structure of the company, disclosing all private individuals with the share of more than 75% in authorized capital of the company and analysis of credit history.

A very important reason for problem loans emerge is the lack of comprehensive credit information from credit bureau, which significantly affect the assessment process. The issue of information exchange through credit systems in Ukraine has been significantly studied by the German Advisory Group on Economic Reforms. According to the group's proposals, there are two very effective directions of development of such systems (Vasyurenko, 2010):

- improving the state register of unreliable borrowers through introduction of obligatory participation of commercial banks in it;
- creation of a state register of large loans that could be potentially dangerous for the stability of the entire banking system; such a register should inform

commercial banks and banking supervisors in a timely manner on the occurrence of credit risks;

The actions of the National Bank of Ukraine in recent years indicate a high activity in the implementation of the regulator's banking supervision policy in accordance with the recommendations of international experts.

Credit risk assessment criteria are now significantly tighter, requiring banks to respond in a timely manner to portfolio quality deterioration, constantly maintain adequate provisions, and have enough capital to cover potential losses. Moreover, annual stress tests introduced by the NBU help ensure that the sector is better prepared to withstand macroeconomic shocks and motivated to build a reserve of capital. The median regulatory capital adequacy ratio stood at 28.3% in late February 2020, while the Tier 1 ratio was at 21.3% (Vyhovs'ka & Simeonova, 2016).

Despite the imperfection of credit assessment system, the banking sector of Ukraine is looking stable. In 2020, banks were much better prepared than before to handle a new crisis. They were sufficiently capitalized, and their capital adequacy ratios were trustworthy. Several years of high profitability contributed to capital growth. Funding was stable and almost entirely provided by customers. The practice of lending to related parties became a thing of the past, no longer threatening the sharp deterioration in lending standards seen before. As a result, the sector had no major overhanging problems on the eve of the crisis, having built a margin of safety to face a potential economic downturn.

## CONCLUSIONS AND PROPOSALS

The study demonstrated that the proper functioning of the entire system of assessing the borrower's creditworthiness cannot be ensured without a clear structuring of its key components and certain methodological techniques and tools at all stages of the credit process.

The conducted research confirmed that stable progress in the development of the mechanism of the national creditworthiness assessment system has a significant impact on the management and intensification of the bank's internal credit risk management policy, which is inevitably reflected in regulations, acts, directives, regulations of the central bank.

The presence of a significant number of problematic points in the functioning of the national credit policy mechanism, the imperfection of the credit process and the current mechanism for assessing the creditworthiness of borrowers of different groups is primarily due to lack of historically established methods of analysis, stable national traditions of banking and dissemination of financial statements, etc.

The implementation of the NBU Resolution № 351 of 30.06.2016 "On approval of the Regulation on determining the amount of credit risk on active banking operations" can be considered as important step towards decreasing of bank bad debts and its credit risk minimization. This resolution sets out the basic provisions of the Basel Committee and the latest methods for calculating the default of borrowers of different groups.

The provided model for assessing the creditworthiness of potential borrowers by ProCredit Bank allows to comprehensively assess current financial situation of the borrower. The qualitative analysis allows to evaluate a reliability of a debtor, management skills and business as a whole because on-site analysis is provided. Analysis of financial statement alongside with projection made allow the bank to suggest maximum possible loan amount to be granted to the borrower, so it can serve it without problem as well as, necessity of the loan and its outcome.

The continuous growth of loan portfolio of ProCredit Bank and low non-performing loans indicator are meant to be evidence that ProCredit Bank's creditworthiness assessment system is risk-oriented and it's a reliable and successful instrument in risk detection. It may serve as an example for national regulator or other banks when designing its own assessment model.

## APPENDICES

### APPENDIX A “EXCLUSION LIST”

#### Exclusion list

**No business relationship shall be established or maintained with clients engaged in any of the following activities:**

**Unethical practices and labour conditions:**

- a) Production or activities involving harmful or exploitative forms of forced labour/harmful child labour<sup>1</sup>, discriminatory practices, or practices which prevent employees from lawfully exercising their rights of association and collective bargaining;
- b) Production or trade of narcotics<sup>2</sup>
- c) Production or trade in weapons (including hunting weapons) and munitions<sup>3</sup>;
- d) Gambling (including online gambling), casinos and equivalent enterprises<sup>4</sup>;
- e) Issuance of cryptocurrencies or operation of cryptocurrency exchange platforms;
- f) Prostitution and any business for which the primary business activity is related to pornography;

**Activities detrimental to health, safety and the environment:**

- g) Production or trade in or use of un-bonded asbestos fibres or asbestos-containing products<sup>5</sup>;
- h) Production or trade in products containing polychlorinated biphenyls<sup>6</sup>;
- i) Production or trade in pharmaceuticals, pesticides/herbicides and other hazardous substances subject to international phase-outs or bans<sup>7</sup>;
- j) Production or trade in radioactive materials (including storage and treatment of radioactive wastes), business or activities relating to the nuclear industry or nuclear materials<sup>8</sup>;
- k) Drift net fishing in the marine environment using nets in excess of 2.5 km in length;
- l) Shipment of oil or other hazardous substances in tankers which do not comply with International Maritime Organization (IMO) requirements<sup>9</sup>;
- m) Activities involving the release of genetically modified organisms into the natural environment without approval being given by competent authorities or where the relevant authority has declared itself as GMO free<sup>10</sup>;
- n) Activities within, adjacent to, or upstream of designated protected areas classified under IUCN Category I – IV<sup>11</sup>;
- o) Trade in wildlife or wildlife products regulated under CITES<sup>12</sup>;
- p) Transboundary movements of waste prohibited under international law<sup>13</sup>;
- q) Construction of (mini-)hydro cascades without appropriate environmental assessment;
- r) Production or trade in ozone-depleting substances subject to international phase-out<sup>14</sup>;
- s) Commercial logging operations or the purchase of logging equipment for use in primary tropical moist forest, production and trade in wood or other forestry products other than from sustainably managed forests<sup>15</sup>;
- t) Exploitation of diamond mines and commercialization of diamonds, when the host country has not adhered to the Kimberley agreement (KPCS) or other similar international agreements on extractive resources.
- u) Underground mining to extract metals, coal, oil shale and other minerals.
- v) Charcoal making with other methods than retort method (use of sealed metal containers).

**Activities having a negative impact on the community:**

- w) The production or trade in any product or activity deemed illegal under host country (i.e. national) laws or regulations or international conventions and agreements, including without limitation, legislation or conventions relating to the protection of biodiversity resources<sup>16</sup> or cultural heritage;
- x) Activities within, adjacent to, or upstream of land occupied by indigenous peoples and/or vulnerable groups, such as lands and watercourses used for subsistence activities such as livestock grazing, hunting or fishing;
- y) Activities which may affect adversely sites of cultural or archaeological significance;
- z) Activities involving involuntary resettlement;

**Clients engaged in any of the following activities shall not be financed:**

- Major production or trade in alcoholic beverages (excluding beer and wine)<sup>17</sup>
- Major production or trade in tobacco<sup>18</sup>

## APPENDIX B "BALANCE SHEET STATEMENT" AS OF 2019

## АТ "ПРОКРЕДИТ БАНК"

Звіт про фінансовий стан на 31 грудня 2019 р.

У тисячах гривень	Примітка	31 грудня 2019	31 грудня 2018
<b>АКТИВИ</b>			
Грошові кошти та їх еквіваленти	30	6,792,359	4,072,957
Кошти в інших банках	31	451,216	-
Кредити та аванси клієнтам	32, 33	16,122,882	16,526,450
Інвестиційні цінні папери		686	773
Відстрочений податковий актив	29	3,151	12,090
Приміщення та обладнання	34	349,981	275,362
Інвестиційна нерухомість	35	-	322
Нематеріальні активи	36	3,384	5,485
Інші фінансові активи	37	14,555	75,123
Інші нефінансові активи	37	140,835	28,111
<b>Усього активів</b>		<b>23,879,049</b>	<b>20,996,673</b>
<b>ЗОБОВ'ЯЗАННЯ</b>			
Кошти інших банків	38	522,245	308,847
Кошти клієнтів	39	14,542,229	11,945,316
Інші позики	40	4,741,927	5,369,078
Інші фінансові зобов'язання та резерв під судові провадження	41	77,377	20,629
Інші нефінансові зобов'язання	41	18,723	15,966
Поточні податкові зобов'язання		34,516	35,662
Субординований борг	43	-	317,191
<b>Усього зобов'язань</b>		<b>19,937,017</b>	<b>18,012,689</b>
<b>ВЛАСНИЙ КАПІТАЛ</b>			
Статутний капітал **	44	1,571,978	1,424,222
Емісійні різниці	44	113,845	(223)
Нерозподілений прибуток		2,256,209	1,559,985
<b>Усього власного капіталу</b>		<b>3,942,032</b>	<b>2,983,984</b>
<b>Усього зобов'язань та власного капіталу</b>		<b>23,879,049</b>	<b>20,996,673</b>

\* Банк вперше застосував МСФЗ 16 1 січня 2019 року. За обраними методами переходу порівняльна інформація не перераховується (див. Примітку 5). В результаті застосування МСФЗ 16 Банк не змінив порівняльну інформацію.

\*\* Статутний капітал станом на 31 грудня 2019 року включає незареєстровану частину у розмірі 261,824 тисячі гривень.

Схвалено для випуску та підписано від імені Правління 27 квітня 2020 року.

В.В. Пономаренко  
Голова Правління



В.В. Смолінський  
Головний бухгалтер

## APPENDIX C "PROFIT AND LOSS STATEMENT" FOR 2019

## АТ "ПРОКРЕДИТ БАНК"

Звіт про прибутки та збитки та інший сукупний дохід за рік, що закінчився 31 грудня 2019 р.

У тисячах гривень	Примітка	2019	2018
Процентні доходи, розраховані з використанням методу ефективного відсотка	26	2,757,371	2,197,777
Інші процентні доходи	26	11,324	11,762
Процентні витрати	26	(1,452,733)	(1,131,402)
<b>Чисті процентні доходи</b>		<b>1,315,962</b>	<b>1,078,137</b>
Збитки від зменшення корисності / (Зменшення збитків від зменшення корисності) фінансових активів	33	(112,429)	9,222
Збитки від модифікації фінансових активів		(10,283)	(15,847)
<b>Чисті процентні доходи після збитків від зменшення корисності фінансових активів та збитків від модифікації фінансових активів</b>		<b>1,193,250</b>	<b>1,071,512</b>
Комісійні доходи	27	238,764	247,295
Комісійні витрати	27	(55,095)	(54,306)
<b>Чисті комісійні доходи</b>		<b>183,669</b>	<b>192,989</b>
Прибутки за вирахуванням збитків від торгових операцій з іноземною валютою та від курсових різниць		15,524	5,817
Прибутки за вирахуванням збитків від фінансових інструментів за справедливою вартістю через прибуток або збиток		(4,158)	(295)
Інші операційні доходи		12,154	14,046
Адміністративні та інші операційні витрати	28	(553,073)	(464,733)
<b>Прибуток до оподаткування</b>		<b>847,366</b>	<b>819,336</b>
Витрати з податку на прибуток	29	(151,142)	(156,879)
<b>Прибуток за рік та інший сукупний дохід</b>		<b>696,224</b>	<b>662,457</b>

\* Банк вперше застосував МСФЗ 16 1 січня 2019 року. За обраними методами переходу порівняльна інформація не перераховується (див. Примітку 5). В результаті застосування МСФЗ 16 Банк не змінив порівняльну інформацію.

Схвалено для випуску та підписано від імені Правління 27 квітня 2020 року.

В.В. Пономаренко  
Голова Правління



В.В. Смолінський  
Головний бухгалтер

## APPENDIX D “CLASSIFICATION OF ECONOMIC SECTORS BY ENVIRONMENTAL RISK”

### Classification of economic sectors by environmental risk

Category	Environmental Risk
<b>Trade</b>	
Shop / Retail trade	Low
Supply of computer/office equipment	Low
Wholesale trade	Low
Other trade	Low
Trade in hazardous material	High
<b>Services</b>	
Business services	Low
Café / Restaurant	Low
Education / Training	Low
Health services	Low
Media / Communications / Design studio / Advertising agency	Low
Real estate	Low
Sports and entertainment facilities / Travel agencies	Low
Hair salon / Cosmetic studio	Low
Photocopy shop	Low
Transport services / Taxi services / Freight services	Low
Other services	Low
Car repair and maintenance services	Medium
Film processing facilities / Printing services	Medium
Water collection, treatment, supply <sup>1</sup>	Medium
Waste Management	High
Transport of hazardous material	High
Laundry services / Dry cleaning	High
<b>Production</b>	
Bakeries / Retail food production	Low
Grain milling	Low
Leather production (without tanning)	Low
Textile production (without dyeing)	Low
Wood processing (incl. carpentry/woodworking)	Medium
Construction works	Medium
Machinery / Equipment	Medium
Miscellaneous manufacturing (incl. handicrafts/jewellery, etc.)	Medium
Textile production (with dyeing)	Medium
Brick-making / Cement and related activities	Medium
Ceramics / Pottery glazing / Enamelling / Glass manufacturing/blowing	Medium
Metal manufacturing	Medium
Plastic goods production (no chemical processing involved)	High
Other production	Medium
Processing of food/beverages	
- Industrial bakery	
- Beverages (wine making, beer brewing)	
- Meat processing	Medium
- Dairy	
- Fruits and vegetables	
Pulp/paper production	Medium
Leather (product) production (with tanning and/or dyeing)	High
Chemical industries/production (involving chemical processing)	High
Raw material extraction	High
- Stone, sand and gravel (extraction from rivers/offshore sandbanks)	High
- Opencast mining (ore and coal)	High
Charcoal making <sup>1</sup>	High
<b>Agriculture, forestry and fishery</b>	
Crop growing, livestock (animal production/breeding), mixed farming	Medium
Marine and freshwater fishing	Medium
Aquaculture	Medium
Logging activities	High
Forestry/wood production (sustainably managed forests) <sup>1</sup>	High
<b>Supply of electricity, gas, steam and air conditioning</b>	
Biogas power plant	Medium
Hydro power plants	High
Photovoltaic power plant (above 1 MW installed capacity and ground installation)	Medium
Photovoltaic power plant (below 1 MW installed capacity or rooftop installation)	Low
Electric power transmission and distribution	Medium
Wind power plants	Medium

## REFERENCES

- Dzyublyuk O. V. (2003), Optyimizatsiyaperedaval'noho mekhanizmu hroshovo-kredytnoyi polityky tsentral'noho banku.
- Dzyublyuk O. V. (2016), Upravlinnya likvidnistyu bankivs'koyi systemy Ukrayiny.
- Dubiniskiy S.V. (2019). *Structural transformation of Ukraine's economy at: marco-, meso-, and micro-levels. Proceedings of the 3<sup>rd</sup> International Scientific Conference*. University named after Alfred Nobel 20 December, 2019, Ukraine
- Caprio G (2002). Adrienne Heritier, ed. Common Goods: Reinventing European Integration Governance. Rowman & Littlefield.
- Investopedia, official website, (Online), available at: <https://www.investopedia.com/>
- Koval'chuk A. V. (2015) Vitchyznyanyy dosvid otsinky kredytopromozhnosti pozychal'nyka, available at: [http://irbisnbuv.gov.ua/cgi-bin/irbis\\_nbuv/cgiirbis\\_64.exe?C21COM=2&I21DBN=UJRN&P21DBN=UJRN&IMAGE\\_FILE\\_DOWNLOAD=1&Image\\_file\\_name=PDF/molv\\_2016\\_1%281%29\\_\\_48.pdf](http://irbisnbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?C21COM=2&I21DBN=UJRN&P21DBN=UJRN&IMAGE_FILE_DOWNLOAD=1&Image_file_name=PDF/molv_2016_1%281%29__48.pdf)
- Kryvokon' O. S. (2012), Orhanizatsiyini aspekty analizu kredytopromozhnosti pidpryyemstv-pozychal'nykiv, Ekonomichnyy prostir, available at: [http://www.irbisnbuv.gov.ua/cgi-bin/irbis\\_nbuv/cgiirbis\\_64.exe?C21COM=2&I21DBN=UJRN&P21DBN=UJRN&IMAGE\\_FILE\\_DOWNLOAD=1&Image\\_file\\_name=PDF/efek\\_2012\\_6\\_40.pdf](http://www.irbisnbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?C21COM=2&I21DBN=UJRN&P21DBN=UJRN&IMAGE_FILE_DOWNLOAD=1&Image_file_name=PDF/efek_2012_6_40.pdf)
- Mel'nyk K. V. (2018), Problemni aspekty otsinky kredytopromozhnosti pozychal'nykiv.
- Mys'kiv H.V. (2014), Problemni kredyty bankiv: sutnist', chynnyky formuvannya ta sposoby minimizatsiyi, Innovatsiyna ekonomika. № 5, available at: [http://nbuv.gov.ua/UJRN/inek\\_2014\\_5\\_49](http://nbuv.gov.ua/UJRN/inek_2014_5_49)
- National bank of Ukraine, (2020), Financial Stability: Loan Portfolio Quality (NPLs), available at:

[https://bank.gov.ua/en/file/download?file=Data\\_NPLs%20\\_2020-10-01\\_en.xlsx](https://bank.gov.ua/en/file/download?file=Data_NPLs%20_2020-10-01_en.xlsx)

Pravlinnya Natsional'noho banku Ukrayiny, (2016), Pro zatverdzhennya Polozhennya pro vyznachennya bankamy Ukrayiny rozmiru kredytnoho ryzyku za aktyvnymy bankivs'kymy operatsiyamy, available at: <https://zakon.rada.gov.ua/laws/show/679-14#Text>

Pravlinnya Natsional'noho banku Ukrayiny, (2020), Zvit pro finansovy stabil'nist', cherven2020, available at: [https://bank.gov.ua/admin\\_uploads/article/FSR\\_2020-H1.pdf?v=4](https://bank.gov.ua/admin_uploads/article/FSR_2020-H1.pdf?v=4)

Procredit Bank, official website, (Online), available at: <https://www.procreditbank.com.ua/>

Procredit Holding, official website, (Online), available at: <https://procredit-holding.com/>

Schumpeter J. A. (1911). The theory of economic development. Harvard University Press, Cambridge, MA

Skochelyas I. M. (2019), "Suchasni formy otsinky kredytopromozhnosti pozychal'nykiv-yurydychnykh osib Ternopil".

Stowell D (2012). Investment Banks, Hedge Funds, and Private Equity. Academic Press.

Vasyurenko O. V. (2010), "Bankivs'kyi menedzhment", Akademiya, p. 97, available at: [https://nmetau.edu.ua/file/navch\\_pos\\_fmb\\_\\_sokir\\_zhuravl\\_izdat.pdf..](https://nmetau.edu.ua/file/navch_pos_fmb__sokir_zhuravl_izdat.pdf..)

Vladymyrs'ka N. I. (2013), Osoblyvosti suchasnykh metodychnykh pidkhodiv do otsinky kredytopromozhnosti pozychal'ny.

Vyhovs'ka N. H. & H. Simeonova "Formuvannya mekhanizmu otsinky kredytopromozhnosti pozychal'nyka v umovakh ekonomichnoyi nestabil'nosti", Visnyk Zhytomyrs'koho derzhavnoho tekhnolohichnoho universytetu. - 2016., available at: <http://ven.ztu.edu.ua/article/viewFile/72510/67906.pdf>

Vyhovs'kyi V.H. (2012), Metodichni pidkhody do otsinky kredytopromozhnosti sub'yektiv hospodaryuvannya komertsyynymy bankamy, *Oblik i finansy APK.* – №3., available at: [http://nbuv.gov.ua/UJRN/Oif\\_apk\\_2012\\_3\\_25](http://nbuv.gov.ua/UJRN/Oif_apk_2012_3_25).

Vyhovs'kyi V.H. (2017), Rozvytok analitychnoho zabezpechennya otsinky kredytopromozhnosti sub'yektiv, available at: <http://ven.ztu.edu.ua/article/download/96674/92366>

Zinchenko O. A. (2013), Uzahal'nennya teoretychnykh pidkhodiv do vyznachennya sutnosti katehoriyi "kredytopromozhnist". - № 1, available at: [http://nbuv.gov.ua/UJRN/eui\\_2013\\_1\\_23](http://nbuv.gov.ua/UJRN/eui_2013_1_23)

Zhytar M. O. (2019), Analiz suchasnoho stanu kredytnoyi diyal'nosti bankiv Ukrayiny (Zbirnyk naukovykh prats' Universytetu derzhavnoyi fiskal'noyi sluzhby Ukrayiny. - № 1, available at: [http://nbuv.gov.ua/UJRN/znpnudps\\_2017\\_1\\_9](http://nbuv.gov.ua/UJRN/znpnudps_2017_1_9).

Zhuravel' T.M. (2011), "Problemy i perspektyvy suchasnykh metodyk otsinyuvannya kredytopromozhnosti kliyentiv", *Visnyk UBS NBU.* –№1(10)