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TOWARDS SUSTAINABILITY OF FINANCIAL SYSTEM VIA COMPLEX ASSESSMENT OF BORROWER'S CREDITWORTHINESS

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Abstract. The purpose of this article is to identify important aspects of the development of creditworthiness in the post-crisis period. The customer's creditworthiness was and is one of the main valuation objects in the practice of banks in the world and in Latvia, determining the usefulness and types of credit relations. It is important for both the lender and the borrower to make an objective, complex assessment of the potential borrower's creditworthiness in order to make an informed decision. More than a decade after the global financial crisis, the financial sector is still considered vulnerable. An analysis of the borrower's creditworthiness is a mandatory step in the credit granting process. Because the borrower's creditworthiness depends on many factors, determining a change in all the factors, causes, and circumstances that will affect the creditworthiness in the future is a significant and rather complex issue. Consequently, the purpose of the borrower's creditworthiness analysis is to conduct a comprehensive examination of his / her performance with a view to making a reasoned assessment of the possibility of returning the resources granted to him. The complex analysis of the borrower's creditworthiness uses different types of economic analysis. The article analyzes the theoretical and methodological aspects of the borrower's (legal entity's) creditworthiness and compares the empirical research of the real practice of Latvian commercial banks in 2011 and 2018. The author investigates the choice of borrower's creditworthiness analysis methods in Latvian commercial banks, their ranking by importance, the importance of credit policy in the lending process and the main signals that indicate the low creditworthiness of borrowers, thus confirming the likelihood of credit risk.

Keywords: borrower's creditworthiness; lending; valuation techniques; commercial bank manager; company/borrower.

1. Introduction

There is a lot of contemporary literature devoted to issues related to sustainability of financial systems. Siddique et al. (2020) compares performace of banks in ASEAN and developing countries. Tatibekova and Bubeyev (2020) elaborates issues related to regulation of bank capital adequacy. Sanchez-Roger et al. (2020) concéntrate on bail-in and interbank contagion risk. Huy et al. (2020) explore inpact of a set of factors on selected banks performance. Adeniran et al. (2020) tackle impact of information technologies on bank performace. Laila et al. (2019) stresses importance of efficient portfolio composition. Herianingrum et al. (2019) analyses peculiarities of providing financing. Nasr et al. (2019) stress importance of enterprise risk management. Tvaronavičienė et al. (2018) points to the issue related to necessity of overcoming liquidity risk and cost inefficiency in leading banks of UK and Germany.

Among listed facets, affection sustainability of financial systems, as a whole, client's creditworthiness plays an important role (Beaver, 1966; Trueck, Rachev, 2009; Mishkin et al., 2013; Bentley Capital Ventures, 2017; Fair Isaac Corporation, 2018; Caplinska, Ohotina, 2019; Caplinska, Tvaronavičienė, 2020). Especialy, when banks competes in the area of credit cots (Rahman et al., 2019). The presented paper is devoted, specifically, to this aspect of bank performance.

The formation of credit portfolio is based on the ability to predict credit risk, therefore its management elements are picked accordingly. In bank's credit policy, it is significant to objectively evaluate the credit worthiness of the potential borrower, based on which to make a relevant decision. Globally, based on the diversity of experience and economic situations, in analysis of credit worthiness, different methods are being applied that can be distinctive or similar, however, every bank customises these methods to their own parameters, therefore, obtaining uniqueness. Contemporaneously, rating systems that separate companies into certain groups of credit risk are topical. The author investigates the choice of methods of creditworthiness analysis by managers of Latvian commercial banks, the ranking of indicators by their importance, the role of credit policy in lending process, and main signals that indicate a low credit worthiness of borrowers, thereby confirming the possibility of credit risk. In 2018, among the surveyed experts, there are 12 managers from five leading Latvian commercial banks. To compare, the results of survey of managers of Latvian commercial banks conducted in 2011 are being used (Caplinska 2011).

2. Design of research

Methodology. Based on theoretical findings on evaluation of creditworthiness and practical information of real banks on creditworthiness drivers, the authors seek to evaluate the degree to which the a set of criteria affect companys' creditworthiness evaluation. The research is based on opionions of main Latvian banks managers, who act as experts. The following criteria were evaluated:

Company balance-sheet indicators: asset structure, structure of equity and liabilities;

Company cash flow indicators;

Company profit/loss indicators;

Financial ratios: profitability, return on assets and capital, liquidity, activity ratios, financial leverage;

Dubious positions in financial report;

Credit history;

Adequacy of collateral;

Risk of the project after changes in market capacity, competitiveness and adaptability;

Evaluation of the sector and operating environment;

Company character, principles of business and cooperation;

Company management, its competency;

Planned financial position with well-founded forecasts;

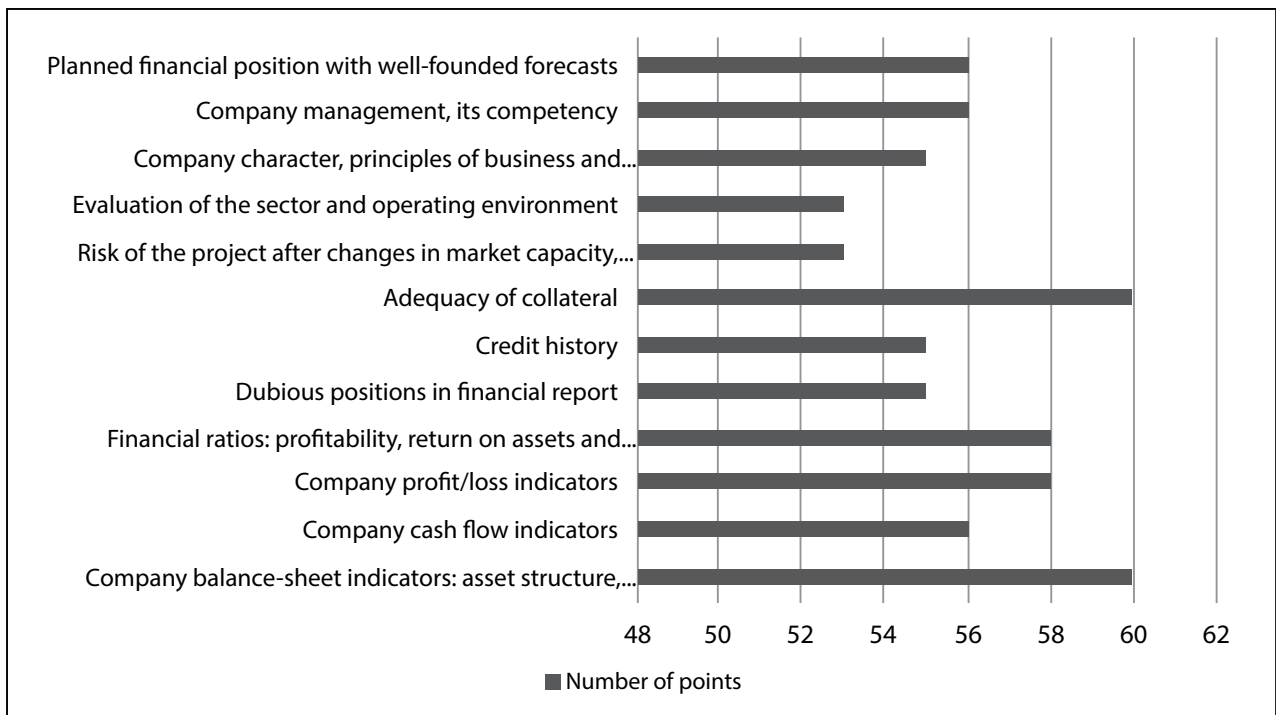**Results.** The obtained results are reflected in Figure 1.

Figure 1. Analysis result of answers to the question (To what extent You are using the criteria in evaluation of company creditworthiness?) by credit managers of Latvian commercial banks, 2018

Source: data of author's analysis.

According to experts, company creditworthiness to the greatest extent (5 points) has been expressed by balance-sheet indicators and adequacy of collateral, which purports the willingness of commercial banks to ensure the amount of issued credit with quality and appropriate pledge, as well as with the demand to insure, hence a caution can be observed. Overall, the banks are looking into possibilities to lend to companies also with inadequate amount of collateral, but in this case, by attracting guaranties from European Union and other forms of pledge. As balance-sheet indicator, banks evaluate equity, since most of company assets are financed by owners themselves, not creditors, thereby increasing the possibility to raise debt financing (equity must not be negative).

The second ranking spot is taken by financial ratios and company profit or loss indicators. The capital adequacy is being evaluated, so that the company would have enough cash to repay debt, the attention is being turned to the total amount of debt in relation to EBITDA (earnings before interest, taxes, depreciation and amortization), it must be out of the risk zone. Liquidity shows how fast company assets can be converted into cash, thereby indicating the financial stability of the company. In the financing process, one of the most significant indicators is the ability of a company to operate with profit.

Third place has been occupied by the following indicators of creditworthiness: company profit/loss, company management, its competency, planned financial position with well-founded forecast. The attention is being turned to adequate sales now or in the future; in this case, one must present a project that will increase sales. In a multi-year perspective, steady growth in sales is being regarded as a sign of a financially healthy company. Forecasts also justify the purpose of raising financing and the vision on the repayment plan. Managers highly regard the age of the company – the longer it has operated in the market, the greater the possibility to raise debt. Since company performance to a great degree depend on its teamwork, bank evaluates the professional experience of the management of the company.

Managers give fourth place to the following criteria: company character, business and cooperation principles, dubious positions in financial reports, credit history. The cooperation of a company is evaluated with the bank, as well as with other companies –business partners, and the state. Bank client's (company's) form with topical

data is considered, favourable conditions for receiving financing are generated by successful long-term cooperation between bank and the company, bank analyses the credit history as a whole, as well as company account history. Primarily, it is being considered whether the account is active because account blocking indicates serious difficulties in company operations. Dubious positions in financial reports rank in the more distant 4th place since initially managers analyse balance-sheet, profit or loss account, cash flow, and only then the dubious positions are investigated more diligently and in more detail.

The criterion of company creditworthiness evaluation ranked number five, according to bank managers, is project risk after changes in market capacity, competitiveness, and adaptability. The same ranking is taken also by the evaluation of sector's business environment, thereby one takes into consideration the business cycle, market and macroeconomic factors characteristic to the sector of industry, since they impact the business model and the structure of the company, outlook for long-term growth, and competition among market players.

It is notable that no expert has used the evaluation of the criteria with 1 and 2 points, where 1 point would indicate the ability of the criterium to reflect company creditworthiness to the least extent. Accordingly, this emphasises the wide view of the credit policy of commercial bank on client's creditworthiness. The company is being evaluated extensively, turning less or more attention to every factor (See figure 1, figure 2, figure 3, figure 4, figure 5).
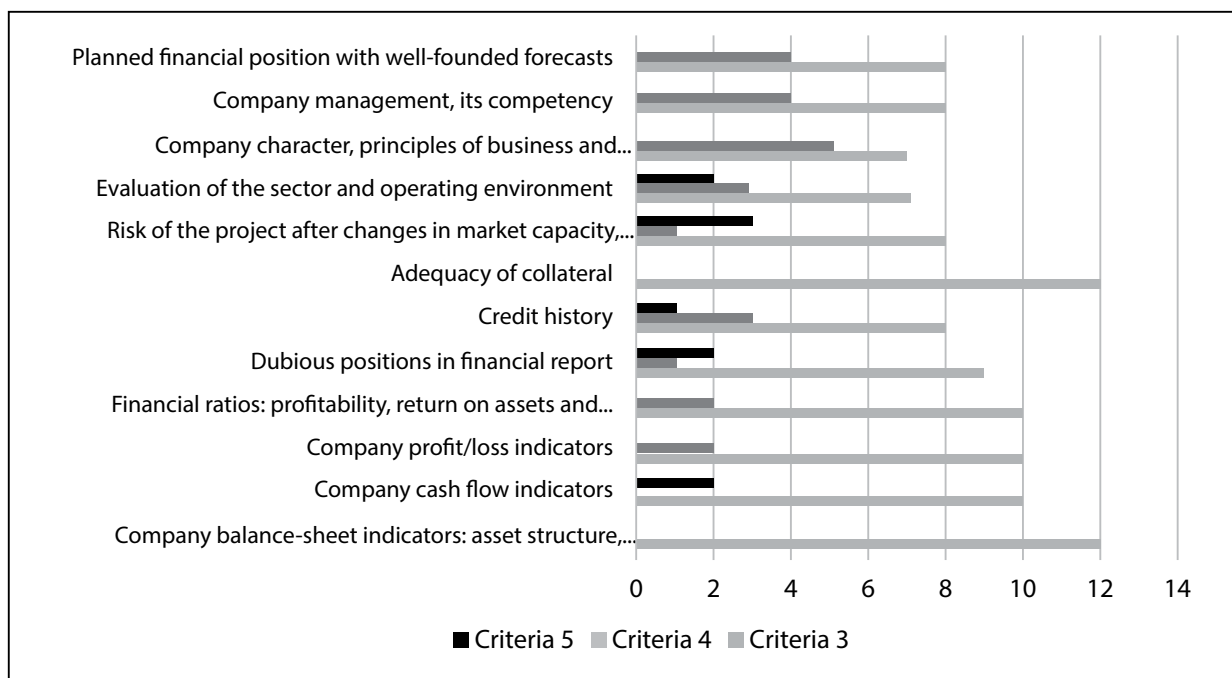

Figure 2. Summary of ratings of answers to the question (To what extent You are considering the criteria in evaluation of company creditworthiness?) by credit managers of Latvian commercial banks, 2018

Source: data of authors' analysis.

In the 2011 study of criteria used in practice by credit managers of Latvian commercial banks in corporate lending decision-making (Caplinska 2011), the results of factor analysis showed that nearly half (48%) of the decision-making was ensured by analysis of company financial indicators. The next factor (company's share of the sector, propensity to protect image and reputation) determined 17 %, the third factor in terms of importance – 12 % (peculiarities of company organisational structure, tolerant attitude towards business environment factors, political situation in the country), and the fourth factor of least significance (8 %) – the level of company management and personnel competency, which in 2018 is rated as most important and very important by all managers.
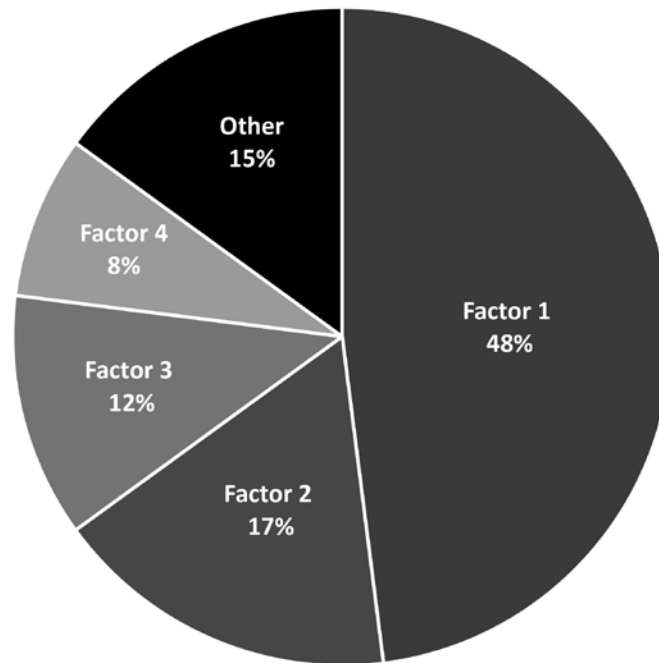
Figure 3. Factor analysis results on factor significance proportion in granting of
credit decision-making practice of managers of Latvian commercial banks, 2011

Note: Factor 1– „company financial indicators and situation in industry", Factor 2 – „company position, specifics and image",
Factor 3 – „business environment and ability of the company to adapt to it",
Factor 4 –"level of competency of company human resources".

Source: figure formed by the authors according to the results of factor analysis.

When one evaluates creditworthiness analysis criteria, there are many signals that indicate the possible low creditworthiness to bank managers, thereby alerting to the probability of default on loan's principal and interest payments. Therefore, the next question in this paper is to name the main signals that indicate low creditworthiness of clients.

According to experts, the main signals that indicate low creditworthiness of a client are:

Low liquidity;

Bad credit history, late payments, large debt;

Large amounts in dubious positions;

Decrease in sales and orders (>20%) compared to previous periods;

Rapid changes in settlement terms of accounts payable, suppliers shorten repayment deadlines;

Owners are not proud of the business, change of owners;

Negligence towards assets, for example, inventories are not stored properly;

Unusual/unexplained records in financial reports, dubious income is recognised or expenses are reduced;

Negative financial results – losses, negative EBITDA, DSCR (debt-service coverage ratio) <1, equity <20%;

Slowdown in collection of receivables;

Dealings with affiliated companies are not adequately explained;

Reduction in cash balances;

Tax debts;

Ambiguities in financial reports are justified with changes in management and accounting;

Factory is operating with low, inadequate capacity.

The signals are reasons to think about the possible credit risk; bank managers before making the decision might invite the client to submit additional documents that clarify the existing situation. Otherwise, the decision not to grant funding is being evaluated.

Based on theoretical and practical aspects, the author offered to bank managers the most popular methods of evaluating creditworthiness (see Figure 4) to ascertain, which of them are known to and used in practice by bank managers. The bank managers received a task to give evaluation in points (from 1 – to the least extent to 5 – to the greatest extent) to what extent the application of the method reflects the true creditworthiness of the company.
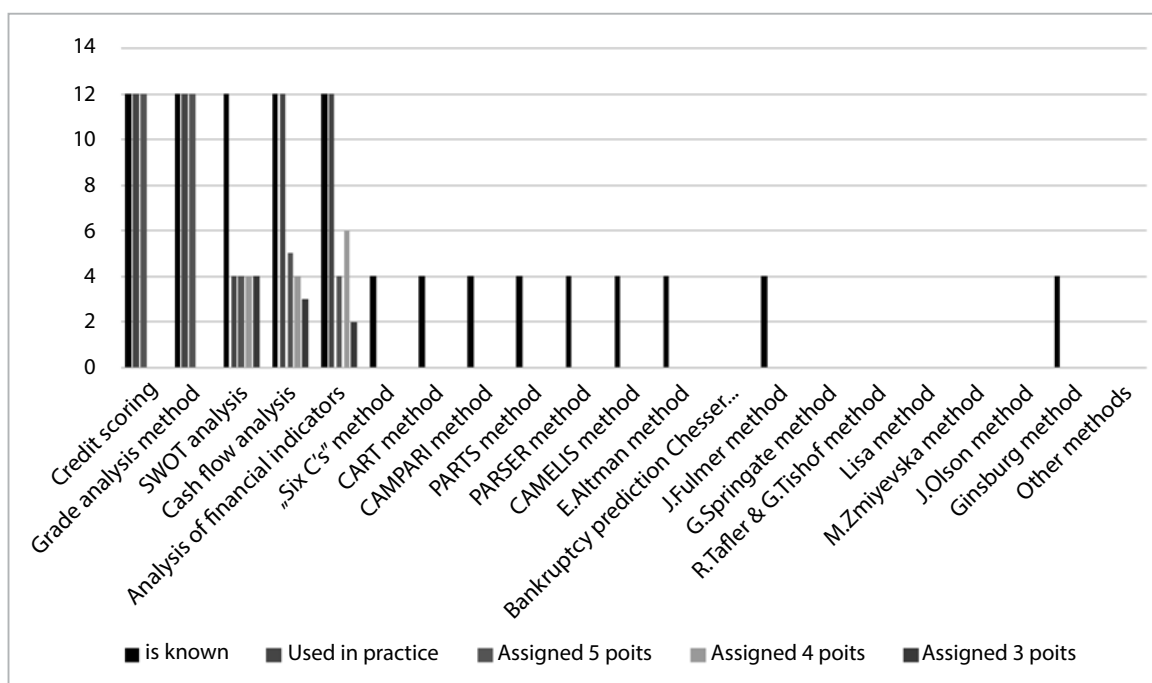

Figure 4. Summary of answers to the question (*Which methods of creditworthiness evaluation do You know, are using in practice, to what extent the application of the method reflects the true creditworthiness of a company?*) by credit managers of Latvian commercial banks, 2018

Source: data of authors' analysis.

Out of the 20 offered methods, all bank managers surveyed noted five methods that they know and use; four of them are used by all bank managers in the survey, and they are: credit scoring, company rating, cash flow analysis, analysis of financial ratios. The fifth method known to all respondents – SWOT analysis – is used only by four experts, who note that this method is used only in analysis of big clients. According to awarded points, the first method that reflects company financial position to the greatest extent is company rating and credit scoring. The second place is taken by analysis of financial ratios and cash flow, third – by SWOT analysis. Company rating encompasses financial indicators that allow comparing the company with the rest of the respective industry, with average ratios in the country, therefore these methods are close to one another, in first and second place, respectively. The data of survey of bank managers conducted in 2011 by the author showed (see Table, Table 2) that the absolute majority of the surveyed managers were acquainted with and primarily used two methods of evaluating borrower's creditworthiness – credit scoring and cash flow analysis, followed by SWOT analysis.

Table 1. Distribution of answers of credit managers of Latvian commercial banks to the question
(Which methods of company creditworthiness evaluation are You acquainted with and which methods do You use,
when company creditworthiness is evaluated?), 2011

Methods of company creditworthiness evaluation	Acquainted with		Using	
	Proportion	**Rank**	**Proportion**	**Rank**
Credit scoring	87.5	1-2	93.8	1-2
Cash flow analysis	87.5	1-2	93.8	1-2
SWOT analysis	68.8	3	56.3	3
Grade analysis method	31.3	4-5	12.5	4
Bankruptcy prediction Altman method	31.3	4-5	0.0	
„Six C's" method	18.8	6	0.0	-
Bankruptcy predictionChesser method	12.5	7-8	0.0	-
CAMPARI method	12.5	7-8	0.0	-
CART method	6.3	9-10	0.0	-
Other methods	6.3	9-10	6.3	5
Bankruptcy prediction Fedotova method	0.0	-	0.0	-
Bankruptcy prediction Sayfullin-Kadykov method	0.0	-	0.0	-
PARTS method	0.0	-	0.0	-
PARSER method	0.0	-	0.0	-

Source: data of authors' calculations of frequency analysis conducted with the SPSS software.

As known methods but not used in practice, bank managers mark the "six C's" method, CART method, CAMPARI method, PARTS method, CAMELS method, E. Altman (2002) prediction model, G. Springate model, and M. Ginsburg model, both in 2011 and 2018. Other methods – D. Chesser prediction method, J. Fulmer model, R. Taffler and H. Tisshaw model, Liss model, M. Zmijewski model, J. Ohlsonmulti-factor model – are classed by bank managers as unknown to them.

The authors infers that bank managers are relying on bank's internal systems of credit scoring and company rating, which are formalised, and award a specific risk zone. The methods of evaluation analysis often synthesise and complement one another. Bank managers are motivating the decision mainly with mathematical evaluations and conformity of financial indicators, relying to a lesser extent on their intuition and experience. This specific is substantiated by bank credit policy, which is proved by the next question in the survey of experts: to what extent and how clearly does credit policy reflect bank strategy regarding the whole lending process? Author puts forward distinct, determined principles that can be combined into four large categories:

- Creating a credit risk management environment that involves the description of the potential service market's geographic and sector boundaries; the authority of bank's council, executive board, credit committee, and personnel of the credit department in the process of awarding, administrating and controlling of loans.

- The use of criteria for awarding loans that involves basic rules in credit allocation, the conformity of credit collateral, the description of the duration of loans, the principles of determining the interest rates of loans, the types of loans, and the structure of loan portfolio.

- The administration, evaluation and monitoring of loans encompasses requirements for credit content, maintenance and quality control, the principles of administrating and classifying loans.

- The control of credit risk that lays down the principles of credit monitoring, the management methods and organisation of problematic loans, monitoring of credit risk limit system and loan portfolio.

From the survey results, one can conclude that banks strictly follow the credit policy and it is designed in an integrated way, covering whole spectre, functioning as guidelines to personnel connected to the lending process. All bank managers allocate rank one 11 principles from 12, thereby giving evidence that the bank designs credit policy in a diligent way. So, the following groups are reflected in the credit policy in nearly wholesome manner:

application of criteria in loan allocation, administration, evaluation and monitoring of loans, credit risk control. The principle, which takes rank two, is the description of potential service market's geographic and industry boundaries; although the diversification of loan portfolio is prerequisite for a successful credit policy, it has been reflected in credit policy in an inadequate way. This can be substantiated with changeable conjuncture, inability to quickly change strategy to adapt accordingly to changes.

Table 2. Analysis of results of answers to the question (To what extent and how clearly does the credit policy reflect bank strategy regarding the lending process as a whole according to the following principles?) by credit managers of Latvian commercial banks, 2018

Principles of credit policy	Proportion	Rank
Characteristics of geographic and industry boundaries of potential service market	86.7	2
Authority of bank council, executive board, credit committee, credit staff in the process of granting, administrating and controlling of loans	93.3	1
Basic rules in granting of loans	93.3	1
Adequacy of loan collateral	93.3	1
Loan duration	93.3	1
Principles of setting of loan interest rates	93.3	1
Types of loans and structure of loan portfolio	93.3	1
Requirements for credit content, maintenance and quality control	93.3	1
Principles of credit administration and classification	93.3	1
Principles of credit monitoring	93.3	1
Management methods and organisation of problematic loans	93.3	1
System of credit risk limits and monitoring of credit portfolio	93.3	1

Source: data from authors' calculations.

Evaluating the answers provided and the theoretical aspects discussed above, the author infers that the framework of creditworthiness evaluation of the borrower in Latvian commercial banks is based on gathering and verifying of information, so that it meets certain criteria. Through the documents submitted and negotiations with clients, the bank learns the needs of the borrower and checks the sincerity of the lending objective, evaluates the conditions of business environment and operations of the borrower, ascertains the financial position and creditworthiness based on the rating. How efficiently do the methods used in banking practice reflect the real creditworthiness of companies? Every commercial bank has its own method of creditworthiness evaluation of clients, it is a trade secret, however, is based on general rules. Scoring and rating is formed individually in banks according to the credit portfolio, in some cases, a comparison is conducted with companies of the same industry or geographic area, or even with all companies registered in Latvia that have submitted an annual report in the Register of Enterprises of the Republic of Latvia. As a result of this comparison, a rank or points are awarded. In turn, scoring and rating is based on calculation of financial ratios, for example, a composition of publicly available corporate rating indicators is offered by the *Lursoft* database, where the rating of a company is determined as follows:

- Solvency – describes the proportion of equity of a company in total assets. The proportion of this ratio in rating is 30%.

- Earnings before taxes – describes company profit or losses in a period before tax expense deductions. Proportion in rating – 20%.

- Liquidity – describes the ability of a company to settle its current liabilities. The proportion of this ratio in rating is 20%.

- Sales growth – average sales growth during the three most recent years. If a company is younger, one calculates annual report data from last available years. Proportion in rating – 10%.

- Return on capital – net profit divided by equity. Proportion in rating – 10%.

- Liabilities–turnover of creditors during the last financial year. Proportion in rating – 10%.

Companies are arranged from the largest to the smallest by every ratio (solvency, liquidity, etc.). Every company is awarded rating points from 0 to 100. The company that is ranked 1st receives 100 rating points, median ranking company receives 50 rating points, the one that is ranked last – 0 points. The rest of companies receive points proportionally, depending on their ranking.

More than ten years after the global financial crisis, what has changed in the cooperation of clients-borrowers with commercial banks, when a loan demand is evaluated, from the perspective of companies/borrowers (leading managers of 38 Latvian companies/borrowers as experts, results of the 2018 survey).
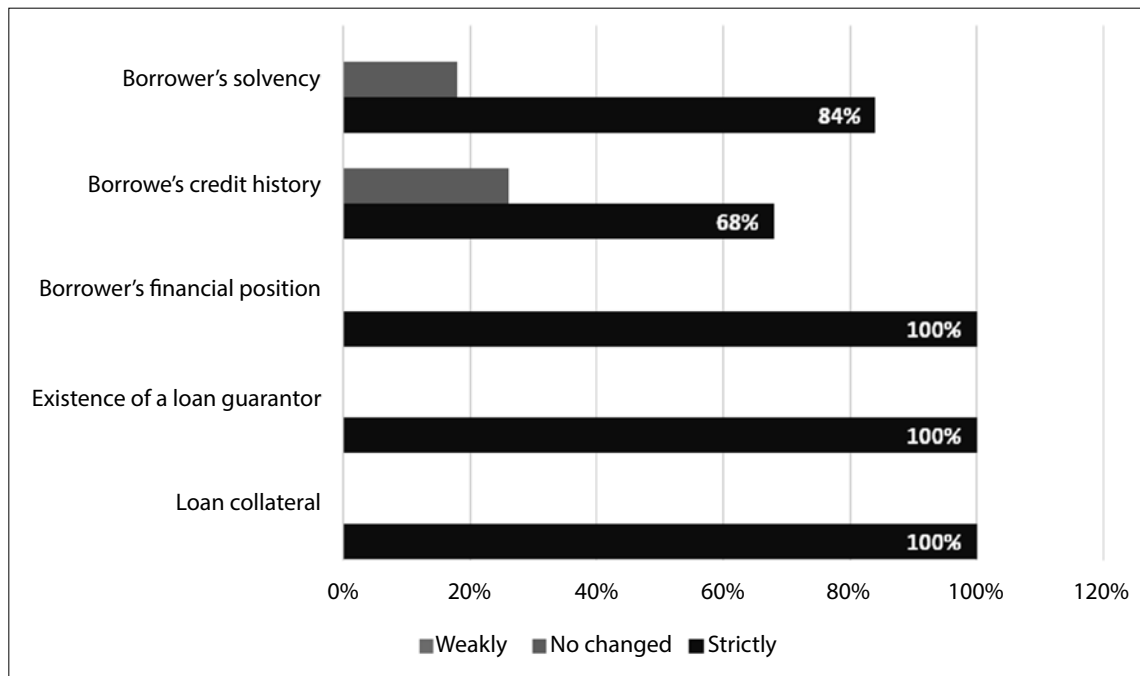

Figure 5. Answer given by borrowers to the question on criteria, in modern economic situation, do the commercial banks evaluate more strictly or liberally, compared to 2007

Source: developed by the authors (survey of leading managers of 38 Latvian companies/borrowers, in 2018).

Analysing the respondents' answers (see Figure 5), the author concludes that only 2 criteria (borrower's solvency and credit history) can be considered as debatable from the point of view of companies/borrowers, 86% of respondents believe that evaluation of solvency and also in 68 % of cases the evaluation of credit history now, compared to 2007 is tighter. Regarding the other criteria, the respondents' views are in complete agreement. The companies/borrowers surveyed are convinced that both the financial position of the company, the collateral of the loan, and the existence of the guarantor are subject to more rigorous evaluation in modern commercial banks.

Proper assessment of its creditworthiness is a prerequisite for the success of any company/borrower. Next, the author wanted to find out, whether the company/borrower is assessing its creditworthiness, when deliberately borrowing money from a commercial bank. Precisely half of those surveyed give the answer "not always", only 38 % unequivocally believe that have evaluated risk options and their ability to repay the incurred debt, while 12 % admit that they have not at all evaluated and considered the risks that exist, when a company incurs liabilities (see Figure 6).
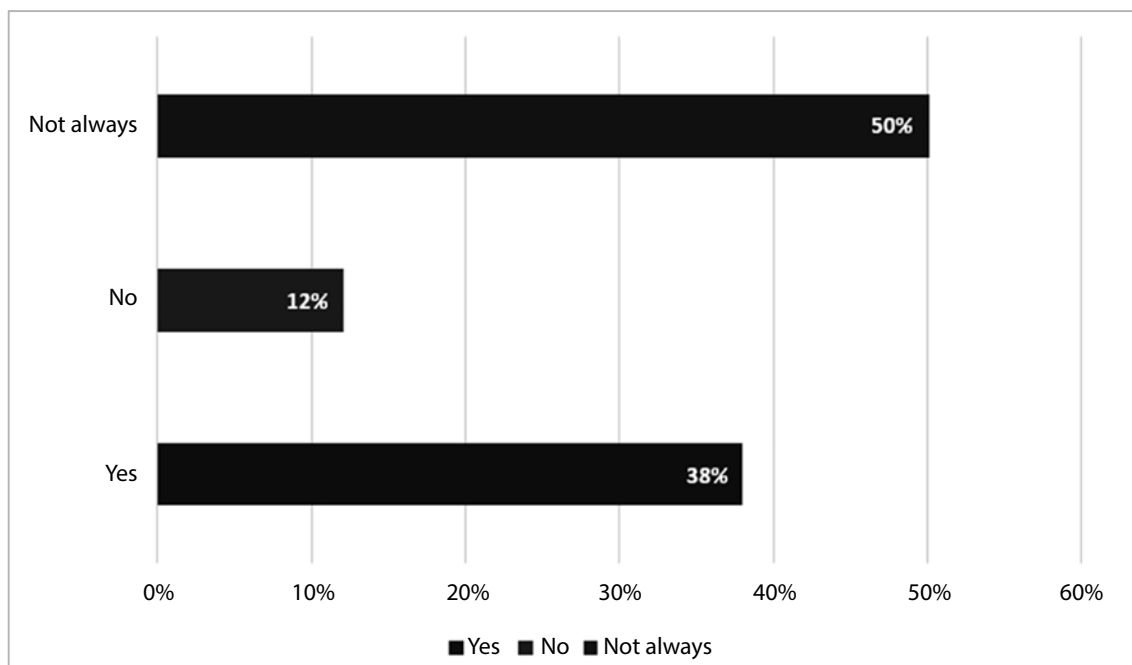
Figure 6. Answer of respondents to the question on risk awareness,
self-assessment of creditworthiness when borrowing money in 2018

Source: developed by the authors (survey of leading managers of 38 Latvian companies/borrowers, in 2018).

In 2018, while continuing to develop digital banking services and following global best practice to improve access to finance for small and medium-sized businesses, commercial banks in Latvia are beginning to introduce online creditworthiness assessment that could improve the access of entrepreneurs/borrowers to their creditworthiness and credit risk evaluation.

Conclusions

The research on the borrower's creditworthiness and methods of its evaluation was based on three empirical studies, which focused on the credit managers of Latvian commercial banks (64 experts in 2011 and 12 experts in 2018) and Latvian companies-borrowers (38 companies in 2018).Managers of Latvian commercial banks were interviewed to find out what they are paying attention to when assessing a borrower's creditworthiness and what methods they know and use in the lending decision-making process.It was hypothetically assumed that the post-crisis approach to creditworthiness evaluation – the field of work has improved for both the bank and entrepreneurs/borrowers. The results of the study partially proved this assumption, as managers in 2018 appear to have a more detailed and nuanced assessment of the borrower's creditworthiness than managers in 2011 (different aspects appear).There was a broad consensus among Latvian entrepreneurs/borrowers that the assessment of creditworthiness in the post-crisis period has become stricter in all key criteria. Despite research limitations related to subjective opinions of experts, the obtained results may be used for formulating economic policy implications.

References

Adeniran, A.O., Hamid, M.J., Noor, H.M. 2020. Impact of information technology on strategic management in the banking sector of Iraq. Insights into Regional Development, 2(2), 592-601. https://doi.org/10.9770/IRD.2020.2.2(7)

Altman, E. (2002). *Bankruptcy, Credit Risk and High Yield Junk Blonds.* Oxford: Oxford University Press.

Beaver, W. (1966). Financial ratios as predictors of failure. In: *Empirical Research in Accounting* (supplement to the Journal of Accounting Research), pp.71-111.

Bentley Capital Ventures. (2017). *What Is a Dun & Bradstreet PAYDEX Score and HowDoes It Work forMe.* Available: http://bentley-

capitalventures.com/2017/10/what-is-a-dun-bradstreet-paydex-score-and-how-does-it-work-for-me/

Caplinska A. (2011). *Aiznemeju kreditspeja un bankas kredit portfelaveidosanas problemas Latvija* (Problems of borrowers' creditworthiness and bank credit portfolio formation Latvia). Rezekne: RA izdevnieciba. (In Latvian).

Caplinska, A.; Ohotina, A. 2019. Analysis of financial literacy tendencies with young people, *Entrepreneurship and Sustainability Issues 6(4)*: 1736-1749. DOI: https://doi.org/10.9770/jesi.2019.6.4(13)

Caplinska, A., Tvaronavičienė, M. (2020). Creditworthiness place in Credit Theory and methods of its evaluation, *Entrepreneurship and Sustainability Issues*, 7(3), 2542-2555. http://doi.org/10.9770/jesi.2020.7.3(72)

Fair Isaac Corporation. (2018) *Learn abou tthe FICO Score and its Long History.* Available: http://www.fico.com/en/products/fico-score#overview .

Herianingrum, S., Ratnasari, R. T., Widiastuti, T., Mawardi, I., Rachmi, R. C., Fadhlillah, H. 2019. The impact of Islamic bank financing on business. *Entrepreneurship and Sustainability Issues,* 7(1), 133-145. http://doi.org/10.9770/jesi.2019.7.1(11)

Huy, D.T.N., Loan, B.T.T., Anh, P.T. 2020. Impact of selected factors on stock price: a case study of Vietcombank in Vietnam. Entrepreneurship and Sustainability Issues, 7(4), 2715-2730. http://doi.org/10.9770/jesi.2020.7.4(10)

Laila, N., Saraswati, K.A., Kholidah, H. 2019. Efficient portofolio composition of Indonesian Islamic bank financing. *Entrepreneurship and Sustainability Issues,* 7(1), 34-43. http://doi.org/10.9770/jesi.2019.7.1(3)

Mishkin F., Matthews K., Giuliodori, M. (2013). *The Economics of Money, Banking and Financial Markets.* European edition. United Kingdom: Pearson Education Limited.

Nasr, A.K., Alaei, S., Bakhshi, F., Rasoulyan, F., Tayaran, H., Farahi, M. 2019. How enterprise risk management (erm) can affect on short-term and long-term firm performance: evidence from the Iranian banking system. *Entrepreneurship and Sustainability Issues*, 7(2), 1387-1403. http://doi.org/10.9770/jesi.2019.7.2(41)

Rahman, A., Tvaronavičienė, M., Smrčka, L., Androniceanu, A. 2019. The Effect of Bank Competition on Cost of Credit: Empirical Evidence from the Visegrad Countries. *Acta Polytechnica Hungarica,* 16(4), 175-195.

Sanchez-Roger, M., Oliver-Alfonso, M.D., Sanchís-Pedregosa, C., Roig-Tierno, N. 2020. Bail-in and interbank contagion risk: an application of FSQCA methodology. *Entrepreneurship and Sustainability Issues*, 7(4), 2604-2614. https://doi.org/10.9770/jesi.2020.7.4(3)

Siddique, A., Masood, O., Javaria, K., Huy, D.T.N. 2020. A comparative study of performance of commercial banks in ASIAN developing and developed countries. *Insights into Regional Development*, 2(2), 580-591. https://doi.org/10.9770/IRD.2020.2.2(6)

Tatibekova, A., Bubeyev, M. 2020. How regulation of bank capital adequacy and liquidity affects pricing of bonds of the banks. Entrepreneurship and Sustainability Issues, 7(3), 1708-1722. https://doi.org/10.9770/jesi.2020.7.3(18)

Trueck, S., Rachev, S. (2009). *Rating Based Modeling of Credit Risk.* Academic Press

Tvaronavičienė, M., Masood, O., Javaria. K. 2018. Preconditions of the Eurozone economic security: how to overcome liquidity risk and cost inefficiency in leading banks of UK and Germany. *Polish Journal of Management Studies*, 18(1), 418-427. http://doi.org/10.17512/pjms.2018.18.1.31

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