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Article

Theoretical Foundations of Credit Risk Assessment In Commercial Banks

Yormatov Ilmidin Toshmatovich[1], Mirzaliyev Axror Baxodirovich[2]

1. Fergana polytechnic institute, Candidate of Economic Sciences, Associate Professor, Department of Management
2. Master student of Fergana Polytechnic Institute.

* Correspondence: ilmidin.yormatov@ferpi.uz

Abstract: This study investigates the theoretical foundations and methodologies for credit risk assessment in commercial banks, with a focus on modern tools like credit scoring and data-driven approaches. Utilizing a mixed-methods approach, the research examines Kapitalbank's practices in Uzbekistan, incorporating both qualitative and quantitative analyses to evaluate creditworthiness. Key financial metrics such as liquidity, profitability ratios, and debt burden are assessed alongside advanced algorithms and alternative data sources to enhance credit scoring accuracy. Results reveal significant improvements in Kapitalbank's loan portfolio quality and risk management strategies, although challenges persist with a 7% share of problematic loans. The findings underscore the need for continuous adaptation of scoring models and staff training to sustain competitiveness and ensure financial stability amidst a dynamic economic environment.

Keywords: Credit Risks, Commercial Banks, Risk Assessment, Credit Scoring Models, Financial Innovations, Risk Management, Data Analysis Methods.

1. Introduction

Financial stability of commercial banks largely depends upon credit risks. Credit risk management has now become a strategic planning component in any bank in the circumstances of the globalization of economic activity, dynamic changes in the financial markets, and an increasing uncertain environment. Credit risk, the probability that a borrower will not be capable of honouring his financial obligations hence causing financial losses for the lender.

One source of financial loss for a commercial bank is credit risks. Banks losses due to their activities amount to more than 80 percent of all losses, over 80 percent of which are caused by credit risks, according to the Basel Committee on Banking Supervision. In addition to losses associated with the non fulfillment of obligations by borrowers, they can arise from a decline in asset quality, a decline in the value of collateral and an increase in reserves for impaired loans. This, in turns, decreases the bank's capitalization and increases its financial instability.

Feasible credit risk management is significant since the bank's financial stability is reliant on it. Generally bank's assets include credit resources that makes up a part of that and in fact, any negative scenario about non repayment of loans will aggregatively affect the bank's liquidity and profitability. An increase in reserves in case of credit risk at a high level leads to a reduction of profitability. Moreover, a deterioration of loan portfolio generally results in the reduction of confidence from investors and depositors and the withdrawal of deposits combined with an unfavorable deterioration in financial positions of the bank.

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Credit risk is the threat that the lender wouldn't be able to recover their money if the borrower defaults[1]. In the contemporary market for credit, where change in economic factors can have a serious effect on the capacity of credit borrowers to meet their obligations, this is an extremely acute problem. Direct losses and loss of reputation in the market are possible consequences of erroneous estimates of the creditworthiness of customers. As a way to limit bankruptcies and losses this is one of the major goals of the credit risk management, allocating resources to analytics and monitoring may eventually pay off by reducing the level of nonpayments.

Credit risks can be classified according to various parameters:

1. According to the sources of occurrence:
   - Internal risks – arise as a result of ineffective management or financial problems of the borrower.
   - External risks are associated with economic, political and social factors that can affect the borrower's ability to fulfill its obligations.[2]
2. By type of borrowers:
   - Individuals – consumer lending, mortgage lending.
   - Legal entities – loans to small and medium-sized enterprises, corporate lending.
3. By type of loans:
   - Secured loans – loans with collateral.
   - Unsecured loans are loans without collateral, which increases the risk for the bank.

2. Materials and Methods

There are several methods for assessing credit risks, the most common of which include:

1. Qualitative analysis – based on an assessment of the reputation of borrowers, management experience and other intangible assets.
2. Quantitative analysis – includes an analysis of the borrower's financial indicators, such as liquidity and profitability ratios. This method allows you to use statistical data for a more accurate assessment of creditworthiness.
3. Credit scoring is a systematic approach based on statistical models that allows you to predict the probability of a borrower's default based on historical data.[3]

3. Results

Kapitalbank, founded in 1992, is one of the leading banks in Uzbekistan. The Bank offers a wide range of financial services, including lending, deposit products and cash collection. At the beginning of 2023, the total assets of Kapitalbank amounted to about 4.5 trillion Uzbek soums, and the amount of liabilities amounted to 4 trillion Uzbek soums.[4] The share of the loan portfolio in the bank's assets was approximately 65%, which underlines the importance of lending as a source of income.

Kapitalbank offers various types of loans:

- Consumer loans for individuals.
- Business development loans for small and medium-sized enterprises.
- Mortgage lending for the purchase of housing.

4. Discussion

Kapitalbank uses qualitative analysis methods to assess the creditworthiness of clients. The Bank examines the entrepreneur's business reputation and experience, as well as analyzes his business plan and financial forecasts.[5] This avoids possible problems in the future.

Kapitalbank uses quantitative methods to assess credit risks. The main coefficients used for the analysis include:

- Liquidity ratio (current liquidity): It shows the borrower's ability to fulfill short-term obligations.
- Profitability ratio: determines how effectively the borrower uses his assets to make a profit.
- Debt burden: measures the level of borrowed funds to equity, which helps to assess the financial stability of the client.[6]

The creditworthiness assessment process was introduced by Kapitalbank, as well as a credit scoring system (the credit scoring process). With this method, the applications can be automatically analysed and the decision time regarding the lending diminishes considerably. The use of the speed and efficiency of data processing helps in reducing the total level of credit risk.[7]

The last five years have been positive in Kapitalbank's loan portfolio. It rose by about 20 percent in 2023 over 2022 to reach 3 trillion Uzbek soums. This is due to an active credit policy of supporting entrepreneurs and consumers [8].

At the beginning of 2023, Kapitalbank's loan portfolio was characterized by a share of problem loans of 7%. The indicator is above average for Uzbekistan (at the level of 3-5%) The following inference on the existing internal risk management system [11, 12, 13, 14] is made on the basis of an increased share of problem loans.

At the level of 10 per cent of the total loan portfolio, reserves have been created by Kapitalbank that will enable the bank to cover possible loan losses. This also complies with the requirements set by the Central Bank of Uzbekistan and provides safety of operations.[10]

The step of improving the credit scoring system, is also an important improvement affecting the accuracy and the efficiency of creditworthiness assessment process. First of all, the machine learning and artificial intelligence have to be more complex in order to be able to process a huge amount of data, and process it in a way which traditional methods are not able to do. By using algorithms like gradient boosting and neural networks, one can increase the consideration of a number of variables and produce a more accurate prediction for the probabilities of default. Therefore, evaluating this type of risks is important, so the modern analysis methods would reduce the probability of default of a loan as such, and raise the quality of a bank's loan portfolio.

The other significant step in the improvement of the scoring system comes into play from the use of additional data sources which allow further expansion of the database of information on borrowers. Credit bureaus aren't the only data sources lenders can get data from; they can access various platforms including social networks, e-commerce and payment systems. For instance, regular utility payments or the number of enrolled subscriptions can provide banks more complete picture on how the customer spends his or her money. This type of data can be used to benefit the analysis to determine the approach for a given client and therefore better the chances of a successful loan repayment.

This is, eventually, the growing of moving the models and algorithms regularly, taking into consideration the changing environment of the economy, consumer's habits and laws as well. Scoring models of banks should be reviewed periodically in such a way as to adapt to current conditions and to the newly acquired risks. It can involve updating coefficients, exploring additional risk markers or taking regulatory changes into account. By this proactive approach, banks in the market will be able to maintain competitiveness and the reliability and sustainability of their credit policy.

Lending, risk management, etc. are key areas in which a successful of a financial institution is hinged on staff training. Current credit risk analysis is important, especially in a growing and changing financial market where relevant employee skills and knowledge are updated and developed to be able to analyze poorly creditworthiness borrowers. They should also focus on the application on theoretical foundations as well as modern methods of scoring credit, data analysis and the use of analytical tools. Training

of employees will allow them to better understand the new technologies and adapt to the changes in regulation, an improvement of the quality of the decision making.

Moreover, the organization needs to have a culture of continuous learning and knowledge sharing. Therefore this could involve internal seminars, workshops and train’s, where experienced employees talk about their background and make others learn from what has been done. This allows the specialists of different departments, such as credit and risk to ‘talk’ and understand each other better and how the actions they perform affect the overall bank strategy. This reinforces the team spirit, and facilitates the formation of a more flexible, responsive, future-proof organization for today’s challenges of the world of finance.

Risk management in the financial institutions is an important process that has the purpose of monitoring the loan portfolio. Banks and credit institutions monitor the quality of assets and react in a timely manner to the change of the solvency of the borrowers. A critical aspect of this process involves regular analysis of clients' payment discipline, looking for problem loans and checking the portfolio condition on a macroeconomic basis. On the basis of modern analytical tools and machine learning technology, credit institutions can better predict the probability of defaults and reduce their losses incurred, to the extent of preserving stability and profitability of the activities. Also, it is able to perform effective monitoring of the loan portfolio and to optimize credit policy and make reasonable decisions on new loans taking account of current market conditions.

5. Conclusion

Finally, continued focus on how to best manage credit risk and successfully address the credit portfolio via effective staff training; effective monitoring of the credit portfolio; and how to formulate the scoring system for continuous monitoring and improvement of the financial institution’s competitiveness and sustainability is vital. With the integration of modern technologies like machine learning and big data analytics, they can assess the creditworthiness of borrowers with more accuracy reducing the risk involved. Updating employees' knowledge on a regular basis, and involving them in the decision making processes, greatly benefit the quality of the credit policy, and contribute to the creation of a more adaptive and innovative organization.

In view of the varying challenges being confronted within the modern financial market, the interest will be for focusing on employee training and development, constant monitoring of credit assets, and the adoption of the most recently analytical techniques which, not only would effectively manage risks but also create the relationship of trust with customers. The knowledge regarding the risks and having a keen strategy of managing the loan portfolio are not only helped in sustainable growth of the institution but also to make the financial system as a whole safer and more responsible.

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