



Methods for Assessing the Credit Risk of Leasing Assets

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ABSTRACT

This paper analyzes how to appeal to the securitization of leasing companies affect the possible appearance in Russia in the framework of Basel II and Basel III capital requirements in respect of credit risk operations, securitization of leasing assets. It also discusses the possible implications for lessors, planned to carry out securitization during the implementation of the project in the Russian document “updates to the framework agreement of the Basel Committee approach to securitization” in its current wording.

Keywords: Credit Risk, Assessment Methodology, Leasing Assets

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1. INTRODUCTION

The purpose of the banking system is to ensure that the process of inter-regional and inter-branch flow of capital and the restructuring of the national economy. The effectiveness of credit activities depends on the activity of intermediary institutions - especially banks, accumulating the potential dispersed resources and choosing the most profitable areas of their investments (Aleskerov et al., 2010; Artemenkov et al., 2004; Bondarchuk and Totmyanina, 2012).

In Russia the share of operational leasing in the total volume of leasing transactions is <10%. At the same time in several countries of Western Europe, USA, Australia, this share is almost four times as much. This is a more flexible and balanced policy of the lessee, not aimed at the acquisition of the asset at the end of the contract, and to use the property exclusively in the time frame of production necessity, as well as the desire to obtain additional services by the lessor. These circumstances indicate that the operational leasing is the highest form of manifestation of leasing relations. In the medium term, experts do not exclude reducing tax benefits provided for financial leasing in Russia, and the reorientation of many leasing companies to operate in the field of operational leasing. During the securitization of leasing assets task of ensuring the acceptability

of credit risk transferred by the originator to investors in times of crisis is particularly acute (Bondarchuk and Totmyanina, 2012). The study examined issues related to the assessment of credit risk of securitized assets operational leasing. If the credit risk of financial leasing to a greater extent due to the risk of default, the operative leasing more significantly dependent on the residual value risk. The risk of default of the lease and loan products have the same nature and has been the subject of several studies. To date, developed a significant number of models for the evaluation. At the same time the problem of the risk assessment of the residual value of leasing assets was not so deeply studied. Many banks, whose licenses were revoked, were serious enough weight on the various segments of the credit market. The crisis most of the commercial banks was manifested in the growth of overdue loans and caused gross violations in the management of banking risks, such as liquidity risks, credit risks, interest rate, currency, equity, etc., The widespread use of securitization mechanism indicates, first of all, to the high development of the leasing industry. In the US and Western Europe, the leasing companies are actively resorted to securitization of leasing assets over the past 20 years, and every year the volume of emissions in these countries are growing. On the other hand, securitization in the Russian leasing market is not yet a generally accepted business practices. Traditionally, the Russian

leasing companies finance their leasing portfolios in the market of bank lending, or at their own expense. However, as a result of the global financial and economic crisis sharply reduced the capacity of the credit market in Russia, resulting in large leasing companies have an interest in a more liquid capital market and growth potential emissions volume increased.

Along with this, now operational leasing was significantly less common in Russia than financial, whereas in the United States and Western Europe, on the contrary, is very popular. This is due to a more flexible policy is not always aimed at the acquisition of the asset at the end of the contract and use of the property within the time frame of production necessity, as well as obtain additional services by the lessor. In addition, experts do not rule out in the medium term reduce tax benefits provided for financial leasing in Russia. In conjunction with the development of the country's leasing relations and the changes in the domestic legislation it could lead to a substantial increase in the volume of operational leasing. On the attractiveness of securitization for Russian leasing companies can also affect the introduction of requirements for capital reserve in respect of these operations in terms of Russia's transition to international agreements calculating capital standards of Basel II and Basel III. Since the rules of the Basel Committee agreements designed to developed European countries, before their implementation in Russia is important to assess what effect they will have on developing the Russian financial system, as well as essential if any adjustment to the existing methodology of the Basel Committee, taking into account Russian specifics.

2. MATERIALS AND METHODS

Managing risk - related components of the economic system. The first can be a source of a second.

Analysis of the dynamics of the leasing market in Europe, and its leader - Germany was based on reports and Leaseurope Bundesverb and Deutscher Leasing-Unternehmen. To analyze the dynamics of the global securitization market leasing assets used data from the European securitization forum and the association of securities industry and financial markets. An analysis of the doctrine of the Basel Committee for asset securitization transactions conducted by the Bank for International Settlements materials. For the proposed model for determining capital requirements in terms of risk of the residual value of the securities, asset-backed operational leasing of vehicles, issued as part of transactions Volkswagen car lease (VCL) 12 and VCL 13, used analytical and statistical information from emission reports and prospectuses to investors of Volkswagen financial services AG. When building fact-forming regression model for the US market securities, asset-leasing vehicles, statistical data of Federal Service of State Statistics was used, bureau of economic analysis, Federal Reserve Board, Federal Reserve Bank of St. Louis, calculator inflation, the National Science Foundation, the bureau of labor statistics in the field of energy of the office of information, Bureau of transportation statistics. The study used analytical materials and statistical rating agencies Fitch ratings, standard and poor's and Moody's. The study took into account data on the domestic leasing statistics, laws and regulations on taxation of leasing services in Russia.

In connection with this very urgent problem looks effective management of credit risk of commercial banks.

During the study of theoretical material conducted a systematic analysis of existing approaches to credit risk assessment. The study used the following mathematical methods: One-dimensional statistical analysis in constructing a model of extreme buoyancy "copula" Gumbel, semi-parametric estimation method "copula" Gumbel model using Kendall's rank correlation. The statistical and econometric research tool includes methods of correlation analysis and multivariate regression analysis. During the simulation study was performed in Mathcad software environment and Microsoft Excel.

3. DISCUSSION

The degree of elaboration of the problems of credit risk management of the bank in a market economy shows that, despite the great attention of domestic and foreign researchers on this issue, many aspects, is still not sufficiently explored, namely credit risks, which are inherent in the present time banks.

In addition, there are large differences in conceptual and methodological recommendations with respect to the credit risk assessment tool in an uncertain environment, as well as its methods, more effective methods of credit risk management and integrated risk analysis and ways to minimize this type of banking risks.

The study of the principles and problems involved in the securitization researchers such as Behr, Gazman, Jackson, Kothari, Mirkin, Soldatov, Schwartz and others. A number of approaches to assessing the credit risk of asset securitization transactions proposed by the Basel Committee. Advantages and disadvantages of these approaches are discussed in Artemenkov, Berger.

Contribution to the study of the nature of the risk of the residual value of leasing assets made Senchak, Fishback, Oyen. However, existing studies have not been paid due attention to the analysis of credit risk of securitized lease assets are not presented in full proof of the imperfection of risk assessment of the residual value of such assets and developed economic mechanisms of motivation being sent to investors within the framework of operational leasing. Although attempts were made some common (Gazman, 2012; Minhat and Dzolkarnaini, 2015).

Bank risk management system - a set of methods (techniques and methods) of the Bank's staff, allowing to provide a positive financial result in the presence of uncertainty in terms of activity, to predict the risk events and to take measures to eliminate or reduce its adverse effects.

Risk - unchanging and constant companion of any commercial activity. His treachery manifests itself in the fact that only accepting risks, can achieve the desired profit level (or some other effect), but the situation could happen the other way around. Even the most optimistic forecasts are reasonable break at one point due to a number of circumstances which affect sometimes impossible. As a result, the expected profit can turn only losses.

With regard to banking situation is further complicated by the fact that the bank is not risking your money and money of their clients (Dougherty, 1999).

Credit risk is the risk of default of credit obligations to the credit institution by a third party. The risk of this type of risk exists for conducting loan and other equivalent operations, which are recorded on the balance sheet and off-balance character can wear.

Such operations include:

- Provided and received loans (loans);
- Placement and attraction of deposits;
- Other funds, including the requirements to receive (return) debt securities, shares and promissory notes, provided under the loan agreement;
- Discounted bills;
- Payment of the credit institution on the beneficiary bank guarantees, are not recoverable from the principal;
- Monetary claims of the credit institution for transactions financing receivable financing (factoring);
- The requirements of the credit institution on the right to acquire in the transaction (assignment);
- Requirements for the credit institution acquired in the secondary mortgage market;
- The requirements of the credit institution on transactions of sale (purchase) of financial assets with deferred payment (delivery of financial assets);
- Credit institution requirements payers paid by letters of credit (in the uncovered part of the export and import letters of credit);
- Requirements for the counterparty to return the money for the second part of the acquisition of securities and other financial assets with an obligation to return the exclusion if the securities are unquoted;
- The requirements of the credit institution (the lessor) to the lessee under finance leases (leasing) (Karepova et al., 2015; De Laurentis and Geranio, 2001).

“Banking review” surveyed 25 leading risk managers of credit institutions, and a survey was compiled rating of bank risks. The most dangerous, most experts considered credit risks. But bankers are not afraid of inflation.

The fact that the bankers have put on first place in the order of importance of credit risk - a very important signal. This means that the banking system in Russia is not just there, but it works. After all, the main task of the banks - to be engaged in lending. Only in the event that this happens, we can talk about the normal development of the country’s financial sector. If there is a risk of credit risk, so banks are really engaged in lending.

The reasons for which the credit risk is the most problematic, called different. Firstly, in lending is concentrated the largest volume of services provided by Russian banks. Therefore, the amount of risk in this area is much higher than for other types of banks. Secondly, in the last year the volume of lending to businesses, organizations and individuals has grown significantly and has become a real factor of competition in the banking market. It is possible that in

these conditions the individual banks take higher credit risks in the fight for customers. However, a high level of risk offset by effective interest rates for the population, which in some banks reach for certain types of loans to 40-50% per annum, while interest rates on less risky loans provided to corporate customers, is much lower. However, in a competitive environment, new players in this market will be forced to work with a lower rate and take some of the risk itself is not.

4. RESULTS

Experience in other countries (Poland, South-East Asia) shows that the underestimation of credit (including retail) risks is dangerous for the banking system (Behr, 2007; Li and Xu, 2015).

Despite the fact that the majority of Russian banks has its own methods of credit risk assessment, determine the probability of default in quantitative terms is very difficult. And this applies to both individuals and legal entities. No quality statistical database on borrowers still do not operate credit bureaus in Russia. Therefore, often a bank takes all the risk value. In the best case, and it is the most common Russian practice, the bank lends to legal persons on the security of their property. However, these risks yet have limited impact on the activity of the banking system as a whole, as problems of medium-sized banks with large portfolios of loans to individuals, will not have a material impact on the interbank market. The largest banks will be the same or supported by the state, or compensate their damage due to income from other activities.

Central to the management of credit risk of the credit belongs to the definition of risk assessment methods for each individual loan/borrower and the bank level (loan portfolio) as a whole.

Under the credit risk assessment of the borrower usually understand the study and evaluation of the qualitative and quantitative indicators of the economic situation of the borrower. Credit risk assessment work in a bank shall be carried out in three stages:

1. Assessment of the qualitative indicators of the borrower;
2. Quantitative indicators of the borrower;
3. Providing a summary assessment - forecasting and formation of the final analytical output.

Assessment of creditworthiness of the customer based on the analysis, which aims at identifying the objective results and trends in its financial condition (Dougherty, 1999).

The main sources of information for credit risk assessment are: The financial statements, the information provided by the borrower, the experience of others with the client, credited transaction scheme with a feasibility study on a loan, the inspection data on site.

Qualitative analysis also implemented in stages:

1. Study of the reputation of the borrower;
2. Determining the purpose of the loan;
3. Determination of the main sources of repayment and interest due;
4. Risk assessment of the borrower, the bank received.

The borrower's reputation is studied very carefully, it is very important is the analysis of the customer's credit history, i.e., the past experience with customer loan debt. Carefully study the information characterizing the business and personal qualities of the individual borrower. Installed as the facts or lack of facts defaults on loans, etc.

Determination of the borrower's creditworthiness is an integral part of the bank to determine the possibility of issuing loans.

By the analysis of the borrower's credit score is meant by the bank borrower in terms of feasibility and advisability of granting him loans, determine the probability of timely repayment in accordance with the loan agreement. For this purpose, use: Financial ratios; analysis of cash flow; assessment of business risk.

The basis of the analysis of the client's creditworthiness is gathering the necessary information that best characterizes the client, which analyzes the main objectives are: Identification of the strengths of the applicant's situation; identify weaknesses of the potential borrower; determining which specific factors are most important to the continued success of the borrower; risks in lending (Chuev et al., 2016; Dougherty, 1999; Karepova et al., 2015).

Analysis of loan officers of financial reporting customer has two forms: Internal and external. External analysis consists of a comparison of the borrower with others. Internal analysis involves comparing the various parts of the financial statements with each other for a certain period of time in dynamics.

Internal analysis is often referred to as the analysis of the coefficients. The analysis showed that the application of the doctrine of the approach to risk assessment of residual value leads to the formation of excess reserves of capital. In connection with this proposed to assess the capital requirements based on historical losses incurred by the lessor in the implementation of the leased asset. Distribution losses prompted to build with the help of the econometric method nonparametric bootstrap. The next step was able to determine that the risk of residual value affects not only the size of the losses arising from the default of lessees, but also the effective term of the leasing contract. In order to take account of both of these factors were introduced the following variables: X1 - the ratio of outstanding obligations of the lessee, who returned to the lessor leased asset to its initial obligations under the leasing contract and X2 - the ratio of losses incurred by the lessor in the implementation of the leased asset to the initial commitments the lessee. Here X1 and X2 are independent random variables. In order to link the private distribution of two random variables and build a common one-dimensional distribution for the risk assessment of the residual value in the future, the model "copula" was used (Penikas, 2010). "Copula" model is a strictly increasing function of each variable and X1 and X2 are defined on the set $[0; 1] \in B, A \times A$ and $[0; 1] \in B$, with domain $[2; 0, 1]$ and with the region values $[0; 1]$. Thus, the model of the "copula" converts the point of a square to a point on the segment $[0; 1]$ number line.

Joint distribution is given by the probability of the individual X1 and X2 separately and function of the joint probability

density or "copula" model, which determines the extent of their interdependence. In the construction of individual private distributions used a two-dimensional coordinate system, the axes of which delayed the probability and outcome of a random variable. In turn, the model of the "copula" is set in a three-dimensional coordinate system in which the axes act as joint and individual probability of X1 and X2. For the purpose of stress testing was used extreme Archimedean model "copula" Gumbel well taking into account the possible extreme fluctuations that are typical of crisis periods. The model is static. Its characteristic feature is a big probability the load on the upper (right) tails of the distribution, which leads to the formation of quite conservative (high) capital requirements.

Risk assessment of residual value has been implemented in software environment Mathcad for the securitization of assets and operational leasing VCL 12 and VCL 13 vehicles carried captive leasing company Volkswagen leasing GmbH and together comprising 79,574 leasing contracts. Kendall rank correlation for u and v was 0.502 and 0.482, respectively. These values can be interpreted so that, if the random variable X1 deviates from its mean value, with a probability of 50.2% and 48.2%, respectively, the random variable X2 deviates from its mean value in the same direction. On the basis of the distributions of u, v and the parameter α joint distribution was built $\alpha C(u, v)$.

Since the use of internal models to formulate the doctrine prescribes capital requirement at the level of potential losses as a result of the securitized pool of prospective instantaneous shock equivalent to the 99th percentile one-sided confidence interval was evaluated in the 99th percentile αC joint distribution of (u, v). Thus, for the securitized pools VCL 12 and VCL 13 and capital requirements, formed in the framework of the proposed model, can reach up to 5.7% and 6.1%, respectively, compared with the 8% prescribed procedure doctrine.

5. CONCLUSION

Reduced capital requirements of the leasing company securitized assets, while maintaining the reliability of the securities issued allowing the lessor to generate additional liquidity to expand its investment activities and to direct resources to the implementation of new leasing projects. As a result, the lessor increases the scope of access to finance, improving conditions and funding costs, increase competitive advantages in dealing with lessees (Benmelech and Dlugosz, 2010; Berger, 2011).

Forecasts compiled lessors based on historical information on the implementation of residual values, the behavior curves of depreciation of the leased asset and its analogs, as well as the expertise of third parties. All studies are divided into four groups. The first group includes the study, according to which the vehicle is considered as a set of different characteristics, and its market value is the sum of the market value of these characteristics. The second group of research devoted to the study of prices depending on used cars from the individual factors. The third group is represented by the study, explaining the fluctuations of prices on the secondary market of cars depending on the overall state of the economy, the

state of markets for new and used vehicles, the state of a particular vehicle. The fourth group is the study showing a difference captive and independent leasing companies approaches to determine the residual value for financial leasing, depending on various factors. Approaches for predicting residual values may vary depending on the type of the leasing company.

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