PROBABILITY OF DEFAULT MODELS FOR CORPORATES WITH TAKING INTO ACCOUNT MACROECONOMIC SITUATION

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Abstract

Corporate sector represents a significant part of banking business worldwide. At the same time due to the lack of historical data, closed financial markets and poor experience, number of researches devoted to corporate credit risk estimation is strongly limited, especially for emerging market economies. Loans to corporates represent a significant part of Russian banking portfolio: to the end of 2013 loans to corporates reached 56% of total credit portfolio and 39% of total assets of Russian banks. Meanwhile the level of non-performing loans in corporate portfolio is increasing - this fact can lead to instability of Russian financial and banking system. Thereby this is increasingly important to develop and enhance approaches to modeling of credit risk for corporates; moreover such approaches should take into account institutional features and characteristics of Russian market.

The key purpose of our research is to develop an empirical model for estimation default probability of potential corporate clients of Russian banks. To achieve this purpose it is necessary to perform the following:

- collect the sample of financial indicators (profitability, financial stability, business activity etc.) for defaulted and non-defaulted companies and macro factors for the specified period;
- execute a statistical analysis to determine the risk-dominant financial indicators and risk-sensitive macro factors;
- execute a multivariable analysis to build sets of logit model based on risk-dominant financial indicators and macro factors;
- analyze the quality and predictive power of final model and represent the economic justification and interpretation of the observed relationship.

Within modeling of default probability of corporates is important to execute industry clustering, because each cluster can have a specific type of relationships between explanatory variables and different degrees of exposure to systemic risks. Within this work we represented the approach of default modeling for construction companies as the most widespread for the Russian banking market. Object of our research – the construction companies which are potential corporate clients of Russian commercial banks. Subject is assessment of default probabilities of these companies based on conditional logit model.

We used the sample which consists of 636 financial statements of construction corporate companies. This sample includes financial statements of 159 defaulted companies which gone to bankruptcy during 2005-2013 and 477 «healthy» companies. Sample was extracted from analytical system FIRA PRO. In order to take into account cyclicality factor and level of systematic risk this is also have a sense to take into account the macro indicators.

Based on statistical and regression analysis we identified the optimal set of risk- dominance financial indicators (profitability, financial stability, business activity etc.) and macro indicators. This set of variables was used for multivariate analysis based on logit models. Based on quantitative characteristic of sets of multivariate models we chose the best models in terms of the level of predictive power. The predictive power of the final models was also analyzed based on classification tables. As a result the models presented in our research allow to estimate the default probabilities of the Russian companies of construction industry based on comprehensive sets of risk-dominance financial and macro factors.

Correct credit risk assessment plays an essential role in the stability of the financial system. As a result of the credit risk underestimation bank can face with significant losses and decreasing of credit

portfolio quality. Meanwhile, during the assessing of the credit risk we also should take into account the existence of cyclicality effect and dynamics of macro indicators in this case credit risk assessment will be more timely and accurate. Significant share of credit portfolio of Russian banks is lending to companies in the construction industry. Moreover, the crisis of 2007 -2009 years showed that companies in the construction industry are highly susceptible to systemic risk and macroeconomic shocks. It is extremely important to develop the approaches to estimation of credit risk level for such companies; these models should take into account not only internal factors like return of assets, profitability, financial leverage etc. but also should include external factors that can explain the level of non-diversified risk in the construction industry. Given the increased volatility in the financial markets, decreasing the quality of banking credit portfolios and increasing the complexity of the modern financial markets, the relevance of this research topic is increasingly important. The issue of the default probability modeling is require the greater participation and involvement not only from the scientific community, but also on the part of banks and the regulator.

JEL Classifications: C52, G32, G33

Key words: probability of default, Basel II, Basel III, credit risk, logit-model.

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