Factors Affecting Credit Risk

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Introduction

The banking system in Romania is a pillar of the financial system and has an important role in the whole economy. In order to have a stable banking system is important to know the risks of the system. The main risk of the banking system is credit risk.

What are the factors that influence bankruptcy , insolvency and credit default risk in Romania? There are many studies that pressents and treats international issues , but our economy is not comparable to that of developed countries and the estimated models can not be applied to companies in Romania. Moreover , Romania 's capital market is underdeveloped , which is another reason why we can't use scoring models estimated in developed countries.

In this study I intend to analyze the factors that influenced credit risk , making an analysis of a portfolio of corporate clients who accessed credit in 2010-2011 and became unable to pay their debts in 2013-2014 .

I choosed to treat this issue because I noted an increase in the bank nonperforming loans to total gross loand, and that has a negative impact on the economy . At the end of 2013, according to data released by the central bank, nonperforming loans increased by 14.2 percent compared to 2013.

In the first chapter I presented the theoretical aspects underlying credit risk, and also the evolution of credit risk in Romania and internationally. In addition, I presented the main ways of quantifying and measuring credit risk. I also presented the main component of credit risk, financial risk, which is based on analysis of profitability, solvency , risk and leverage of a company.

The second chapter is based on the analysis of a portfolio from a bank in Romania, which contains 15% customers came indigent. Using principal component analysis , discriminant analysis and logit analysis I proposed to estimate a scoring model that can be applied in the Romanian banking system .

The aim of the study is to determine the factors that influenced the probability of default of some companies in the portfolio of BRD group. For this, I will esimate a scoring function on a sample of 247 Romanian companies from various sectors. The analysis is based , moreover, on the estimation of a logit model to emphasize direct or indirect connection between financial indicators of firms and the probability of default.

The endogenous variable is the probability of default of debt that takes the value 1 when the firm has recorded more than 90 days late and 0 in terms of the delay is less than 90 days or non-existent.

Exogenous variables were selected 12 relevant financial economic indicators for each of the five categories that reflect the economic and financial situation of a company as shown in Table 2.2. Moreover , to have relevant results I also used three dummy variables, one to divide firms by sector Retail / Non Retail, second to differentiate firms with profit and those who have not registered profit, and give you the third to differentiate equity firms have less than 0 .

Theoretical and empirical studies about credit risk

Credit risk is the risk that arises when a customer of the bank,is not able to fulfill its obligations under the terms and conditions of contract. In Romania, there is an increase in the amounts outstanding with a delay of 90 days related companies in 2012-2014.

Financial risk is the main component of credit risk. Financial risk refers to the difficulties that may arise in a company , that has an impact on the timely repayment of debts to the bank.

There are several methods to determine multivariate scoring systems: the Logit, Probit model, linear probability analysis, discriminant analysis. The most important international scoring models are: The Altman model, the model of Conan Holder, and the model of Taflller.

The need for Romanian scoring models derived from the fact that in Romania the bankruptcy has other coordonate than in more developed countries. In other words, in Romania there are many companies in bankruptcy, but which has not yet declared bankrupt. Moreover, many foreign models may not be relevant in Romania because the stock is “young” in our country.

Factors that influence credit risk . Case study BRD-GSG

The aim of the study is to determine the factors that influenced the probability of default of borrowers from a portfolio of clients. For this, I want to estimate a scoring model using a sample of 247 Romanian companies from various sectors. The analysis is based, moreover, on the estimation of a logit model to find direct or indirect connection between financial indicators of firms and the probability of default.

The endogenous variable is the probability of default of debt. Tha variable takes the value 1 when the firm has recorded delays more than 90 days and 0 when the delay is less than 90 days or non-existent.

The exogenous variables were selected from 12 relevant financial economic indicators. Moreover, to have relevant results as I also used three dummy variables, to divide firms by sector Retail / Non Retail, to differentiate firms with profit and those who have not registered profit, and to differentiate firms that have less than 0 equity.

To test and validate the proposed hypotheses i used a number of methods of data analysis such as principal component analysis, cluster analysis ,discriminant analysis and logit model.

After appling the pincipal component analysis I can exclude from the analysis two variables, solvency and CPR / DAT.

The scoring method is a method that is based on discriminant analysis. As a result of discriminant analysis I detemined a Z score for the case of Romania

Z=0.054*ROA+0.842*CA/AT-0.096*Aimo/AT-0.596*DAT/AT+0.142*ROE+0.243*Mpn+0.291*ACR/CA,

where

$Z\varepsilon$ (-0.44705, 0.00125) high risk of debt default

$Z\varepsilon$ (0.00125, 2.32499) uncertainty

$Z\varepsilon$ (2.32499,6.80527) no default risk of debt

To determine the probability of default I alos used the probit model and I found the next results:

Empirical results

	R1	R2	R3	R4	R5
ACR/AT	-	1.4187*	-	-	0.345*
ACR/CA	-	-	-	-0.019*	-
CA/AT	-	-0.569*	-0.292*	-	-
DAT/AT	-	0.558*	-	-	-
MpB	-	-21.52***	-	-	-
MpN	-	-	-	-	-13.16**
ROA	-	-	-16.38*	-	-
ROE	-1.48*	-	-	-	-
CPR/AT	-9.025*	-	-	-	-
D_CPR	-2.131*	-	-	-	-
R^2	9%	18%	11%	9.8%	9.5%
No obs	247	217	217	217	217

The following logit model I can say that the probability of default and ACR_AT is a direct relationship.

Also, between CA / AT and PD there is a connection. If the company has a high value of the indicator CA/AT, the probability of default decreases because the firm can achieve a higher return with the same amount of total assets.

Variable DAT / AT also has a direct link with the probability of default. MPB and MPN are indirectly related to the probability of default as expected. If the profit is higher the chances that the probability of default to approach 1 drop.

ACR / CA is having an indirect connection with the probability of default. This is explained by the fact that if the rotation speed is becoming larger, the company becomes more profitable, so the probability of default is lower.

Between ROA and PD is an indirect link. From the economic point of view this means that if the assets are used effectively, in terms of profit earned, the probability of default of debt decreases.

Also there is an indirect link between ROE and the probability of default. So if own funds provided by shareholders for profit are used efficiently, the probability of default of debt decreases.

Conclusions

In conclusion, the scoring model obtained has a high predictive power of the probability of default, and can be used in the future to analyze the creditworthiness of businesses. In addition, the link between financial and economic variables PD was confirmed by logit analysis.

To achieve this I used several techniques and econometric models. Initially I developed principal component analysis in order to keep only the relevant variables in the analysis.

Subsequently, given that the companies analyzed were from different sectors, I chosed to study the cluster analysis.

Discriminant analysis was used to estimate the Z score and estimate a new model that can be used in Romania. Following discriminant analysis, 85.1% of the variables were correctly classified. Among the independent variables, only Aimo / AT and DAT / AT resulted negative. We note that the result for variable DTA / AT was the same meaning as estimated by Ion Anghel.

The results were as expected and if the variables ROE, ROA, the rate of current assets, and total asset rotation.

To improve the accuracy of scoring, I propose to include in the analysis qualitative variables. I believe that indicators of market share, dependence on customers and suppliers, and corporate governance would improve the scoring estimated in this paper. Unfortunately, this information couldn’t be obtained because the companies analyzed aren’t well-known companies and are not listed.