Homework 2

T-602-RISK, 2019

Homework to be returned on March 4th 2019

Note: Students can work in groups of 2-3 and can return one solution for the group.

Problem 1: Logistic regression model using German Credit Data

The German Credit Data contains data on 20 variables and the classification whether an applicant is considered a Good or a Bad credit risk for 1000 loan applicants. Each applicant was rated as "good credit" or "bad credit".

You can download the German Credit Data at for example:
https://newonlinecourses.science.psu.edu/stat508/resource/analysis/gcd

a) Analyze the data and review the predictor variables and guess what their role might be in a credit decision by ranking them from best to worst predictor. (No modelling or mathematic needed). https://ocw.mit.edu/courses/sloan-school-of-management/15-062-data-mining-spring-2003/assignments/GermanCredit.pdf
b) Import the german_credit.csv data into R (recommended). (See for example: http://www.r-tutor.com/r-introduction/data-frame/data-import)
c) Perform logistic regression in R on the data. (See for example: http://www.ats.ucla.edu/stat/r/dae/logit.htm).
d) Analyze the results and mention what statistical measures you use to choose variables into your model. What variables do you use and how do they compare to your guess in part a).
e) What measures would you use to test the performance of your model?
f) Use the test dataset to calculate measures that test the quality of your model.

Problem 2: A retail bank has a total exposure to 4,000 customers of 133,271 million ISK (see excel sheet Homework_2_SPM 2019). The total exposure is also the bank´s total assets.

The retail portfolio is divided into Real Estate and Other. For the Real Estate portfolio 85% of the portfolio has LTV less than 80% (35% RW according to SA approach – 75% RW when LTV > 80%). Tier 1 is 7,515 million ISK and Tier 2 is 3,318 million ISK.

a) What is the average risk weight (RW) for each portfolio given that the bank uses the standardized approach (SA)?

b) What is the risk weighted assets (RWA) based on SA RW?

c) Use the IRB method to calculate RW for each loan.

d) What is the RWA based on IRB RW?

e) What is the leverage ratio for the Bank?

f) Calculate the CAD based on the SA and IRB RWA.

g) Based on your calculation does the bank meets capital requirements set by authorities?