

Assignment 2

The model

In the study of stability of the borrowing firms of a bank, the purpose is to construct a model in determining stability of their loans. The study employs the following model:

$$Prob(Y=1|X) = f(x_1, x_2, x_3)$$

Dependent variable $Y_i = 1$ if the loan is *bad loan* = 0 otherwise

Independent variables

x_1 is debt coverage ratio.

x_2 is current ratio represented by current assets to current liabilities.

x_3 is profitability index represented by sales to total assets.

Strategic NPLs can be determined as the case where the borrowing firm is expected to be good loan but in practice that firm turned out to be bad loan.

Requirements:

- 1 Estimate the model assuming that the probability function is logistic probability distribution function. Interpret your estimated result (overall test, individual test, pseudo R^2 , counted R^2).
- 2 Compute marginal effect at mean and at median.
- 3 Determine the number of Strategic NPLs firms in this case using the threshold of predicted value = 0.5
- 4 Determine the number of Strategic NPLs firms in this case using the threshold of predicted value = 0.7
- 5 Determine the optimal threshold that balance type I and type II error using ROC.
- 6 Estimate the model assuming that the probability function is cumulative normal probability distribution function. Can we compare the estimated coefficient from this model and those from (1)? Why or why not?