Assignment MLE & GMM

Part I

The study on bankruptcy firm employs the following regression model.

$$z_i = \beta_0 + \beta_1 x_{1i} + \beta_2 x_{2i} + \beta_3 x_{3i}$$

The log-likelihood function of this model is as follows:

$$\ln L = \begin{cases} \ln \Phi(z_i) \; if \;\; y_i = 1 \\ \ln \Phi(-z_i) \; if \;\; y_i = 0 \end{cases}$$

where: y_i is discrete binary variable, values either *0* or *1*.

x_{ki} are independent variables , *k=1, 2, 3.*

$\Phi(.)$ = Cumulative normal density function.

From the given data set (Assign02_MLE):

1. Estimate the above models using MLE with Newton-Ralphson algorithm and BHHH.
2. Perform hypothesis testing whether $\beta_1 = \beta_2 = \beta_3 = 0$ using LR-test and Wald test.

Part II

From the given data set (assign02gmm):

Estimate the interest rate structure models applying all 9 models using GMM.