Assignment 2

Due: 2 March 2017

Part 1

Leverage and Performance

$$Leverage_t = \alpha_1 + \alpha_2 Performance_t + \alpha_3 Risk_t + \alpha_4 \ln Size_t + u_{1t} \quad (1)$$

$$Performance_t = \beta_1 + \beta_2 Leverage_t + \beta_3 MarketShare_t + \alpha_4 \ln Size_t + u_{2t} \quad (2)$$

Endogenous variables in this system include $Leverage_t$ and $Performance_t$
Exogenous variables in this system include $Risk_t$, $Marketshare_t$, and $\ln Size_t$

1. State reduce form model of these system models.
   $Leverage_t = \pi_1 + \pi_2 Risk_t + \pi_3 MarketShare_t + \pi_4 \ln Size_t + e_{1t}$
   $Performance_t = \pi_5 + \pi_6 Risk_t + \pi_7 MarketShare_t + \pi_8 \ln Size_t + e_{2t}$
2. Estimate reduce form model using OLS and prediction of the endogenous variables.

Part 2

In the study of default probability of the loan, determination factors include:

$$Prob(Y=1|X) = f(X_1, X_2, X_3, X_4)$$

Dependent variable $Yi = 1$ if the firm is bad loan, and $= 0$ for good loan.
Independent variables

X_1 is debt coverage ratio.
X_2 is liquidity ratio represented by current assets to current liabilities
X_3 is profitability ratio represented by sales to total assets
X_4 is solidity ratio represented by retained earnings to total assets

Requirements:

1 Estimate the model assuming that the probability function is (a) cumulative normal probability distribution function and (b) logistic probability distribution function. Interpret your estimated result (overall test, individual test, pseudo R^2, counted R^2).
2 Make comparison of the goodness of fit of the two models.
3 From Probit model, show how to compute Overall LR-test.
4 From Logit model, compute predicted value of index value and predicted probability of being bad loan by using mean value of all *Xs*.
5 Compute marginal effect at mean and at median for Logit model.
6 Compute marginal effect at the value of X_1=0.5, X_2=1, X_3=0.5, X_4=0 for the Probit model.
7 Determine counted R^2 using the threshold of predicted value = 0.5 for Logit models.
8 Determine counted R^2 using the threshold of predicted value = 0.7 for Logit models.