

**Problem Set 5**

Due November 30, noon

Put in my mailbox (in N413) or hand it in at the beginning of tutorial session (to Ju)

General guideline for all problem sets:

Make sure to carefully explain your answers and interpret the results. Always state the null hypothesis and the alternative hypothesis you are testing, and the significance level you are considering.

Exercises

1) Which of the following are consequences of heteroscedasticity? Explain.

- (i) The coefficients from an OLS estimation are biased
- (ii) The usual F statistic no longer has an F distribution
- (iii) OLS is no longer BLUE, but WLS estimations will be BLUE
- (iv) The estimated standard errors from the coefficients in an OLS estimation are too small

2) Wooldridge 10.2

Computer Problem

The dataset `reform.dta` contains information of 26 countries that used to have economies under central planning, and undertook economic reforms. The World Bank created a liberalization index, to measure progress in reform in various sectors. In this exercise we want to understand why some countries were faster in undertaking reforms than others.

- 1) Generate a dummy "*fastref*" equaling 1 if *libindex* is  $>0.8$  and 0 otherwise
- 2) Estimate a linear probability model explaining the probability of fast reform as a function of the number of years under communist rule, the initial *GNPpc*, and share of agriculture in GNP. Include also a dummy variable equaling 1 if the country belonged to the Former Soviet Union, 0 otherwise. Use robust standard errors for your estimation.
- 3) Explain why you should use the robust standard errors for the estimation in question 2
- 4) Give a careful interpretation of the results obtained in question 2 (pay attention to significance level).
- 5) Estimate a logit model with the same variables. Which additional assumption(s) are you making when estimating this model compared to the linear probability model in question 2?
- 6) Interpret the sign of the coefficient of *y<sub>cp</sub>*. What does the magnitude of the coefficient tell you?
- 7) Calculate the marginal effects at the mean of the continuous variables, and of a shift from 0 to 1 for the dummy variables
- 8) Give the interpretation of the calculated marginal effect of *gnpstart*