EPFL
ENAC TRANSP-OR
Prof. M. Bierlaire - Dr. de Lapparent

Mathematical Modeling of Behavior
Fall 2015

EXERCISES SESSION 5

The purpose of this lab is to compare the different specifications of Multinomial Logit (MNL) models you tried in the exercises session 4 with some given examples and improve your best model by adding some non-linearities in the deterministic part of the utility function. You will also learn how to test non-nested hypothesis. You will work with the *Airline Itinerary Choice (Boeing)* dataset.
The scientific paper that you will have to read and study during the semester is presented.

Question 1
Using the model files provided, estimate models with different non-linearities (Box-Cox, piecewise linear, power series, logarithm). What is the interpretation of the parameters obtained in each case? Use a likelihood ratio test to test each of them against a model with a linear specification. Can you use a likelihood ratio test to decide between models with different non-linearities?

Question 2
Using the files provided, perform a Cox-test between a model where the fare is considered linear and one where the fare is considered logarithmic. Use the same test to compare two of the models with different non-linearities from Question 1.

Scientific paper
The paper on which you will be evaluated in the final exam is available together with the material of this lab session. You are expected to read it, understand it and study it for the final exam. General questions on the topic might be asked. You are allowed to ask concrete questions on concrete things that you don't understand. Questions that are too vague will not be answered.

mbi/ ek/ afa /mdl