



### First Assignment in Special Topics of Business Economics

The excel file named RegData.xls<sup>1</sup> reports the output and the input levels of thirty-eight regions for Germany in the 2003-2009 period. The output is measured by Gross Domestic Product (million euros) while the two inputs are Labor (measured by thousands of employees) and Capital (million euros). Capital has been estimated using the Perpetual Inventory Method (PIM) to create a consistent measure. Using the theoretical foundation and the methodological approaches already developed in our lectures please estimate the following:

1. The technical efficiency under CRS and VRS (using program R or DEAP) for each region the period 2003 to 2006 (for the first group<sup>2</sup> of students-Group A) and 2006-2009 for the second one (Group-B).
2. The corresponding scale efficiency measure (using program R or DEAP).
3. The malmquist productivity index (using program R or DEAP) and its components (scale, technical and efficiency change).

Please use the above estimations to create a report (in Latex) which will describe the total performance in terms of productivity and efficiency of German regions (no more than 2500 words). The report should present your estimations and your explanations about regions performance in an analytically way using possible argumentation.

<sup>1</sup> <https://eclass.upatras.gr/modules/document/index.php?course=ECON1333&openDir=/5640cd24lakL>

<sup>2</sup> Group A corresponds to 1-18 serial number while group B to 19-36.