

Written Exam Economics Summer school 2017

Applied Economics

August 19th and 20th, 2017

This exam question consists of 2 pages in total.

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title which was followed by “eksamen på dansk” in brackets, you must write your exam paper in Danish.

If you are in doubt about which title you registered for, please see the print of your exam registration from the students’ self-service system.

The paper must be uploaded as one PDF document. The PDF document must be named with exam number only (e.g. ‘1234.pdf’) and uploaded to Digital Exam.

Focus on Exam Cheating

In case of presumed exam cheating, which is observed by either the examination registration of the respective study programmes, the invigilation or the course lecturer, the Head of Studies will make a preliminary inquiry into the matter, requesting a statement from the course lecturer and possibly the invigilation, too. Furthermore, the Head of Studies will interview the student. If the Head of Studies finds that there are reasonable grounds to suspect exam cheating, the issue will be reported to the Rector. In the course of the study and during examinations, the student is expected to conform to the rules and regulations governing academic integrity. Academic dishonesty includes falsification, plagiarism, failure to disclose information, and any other kind of misrepresentation of the student’s own performance and results or assisting another student herewith. For example failure to indicate sources in written assignments is regarded as failure to disclose information. Attempts to cheat at examinations are dealt with in the same manner as exam cheating which has been carried through. In case of exam cheating, the following sanctions may be imposed by the Rector:

- 1. A warning
- 2. Expulsion from the examination
- 3. Suspension from the University for at limited period or permanent expulsion.

The Faculty of Social Sciences
The Study and Examination Office
October 2006

1. You are interested in analyzing a national program that is going to install surveillance cameras at various locations of several cities in Paraguay (the government has identified 400 eligible cities in Paraguay). Suppose you have (and you will have in the future) geo-referenced crime data (so that each crime reported in the country can be mapped to a geographic location, such as a street segment of no more than 100 meters). Assume that a camera can monitor exactly a street segment. Design an experiment to identify (i) the impact of the cameras on crime and (ii) potential effects of crime displacement (given the nature of the country, assume that displacement may only occur within a city, and not between cities).
2. Consider the following system of simultaneous equations.

$$Y_{1t} = X_{1t} \beta_1 + X_{2t} \beta_2 + e_{1t} \quad (1)$$

$$Y_{2t} = Y_{1t} \gamma_1 + Y_{3t} \gamma_2 + e_{2t} \quad (2)$$

$$Y_{3t} = Y_{1t} \gamma_3 + Y_{2t} \gamma_4 + X_{2t} \beta_3 + e_{3t} \quad (3)$$

In this system, both X_1 and X_2 are exogenous variables. Determine which of the system equations are identified (individually, that is, determine which system parameters can be consistently estimated). Please notice that the question is not asking if the system is identified as a whole.

3. Consider that you want to estimate the impact of having a personal computer (PC) on GPA: $GPA = \alpha_0 + \alpha_1 PC + u$, where PC is a binary variable that takes the value 1 when the student owns a PC and zero otherwise. (i) Discuss whether parent income is a good instrument for PC. Why or why not? (ii) Suppose that a social program randomly assigned computers to half the students. Explain how you could use this information to identify the parameter of interest.
4. The government of an African country is about to build a hospital in the country. The country has 30 provinces, which are relatively isolated one with the other (meaning that only people from the province would benefit from the new facility). Given current health facilities, the hospital is expected to be a great improvement for people living in the region. All individuals have the right to use the hospital. Provide two designs (an experimental design and a non-experimental design) that allow you to identify the causal impact of the hospital on health outcomes. Please explain which are the treated and control groups, and possible limitations to your designs.