STOCKHOLM UNIVERSITY
Department of Statistics
Dan Hedlin

Autumn semester 2012

Statistical Methods Part 1

Excercise 4

Worth 10 marks out of 100 marks.

Read these two papers:

Biemer, P. and Witt, M. (1996). Estimation of Measurement Bias in Self-Reports of Drug Use with Applications to the National Household Survey on Drug Abuse. Journal of Official Statistics, Vol.12, No.3, 275–300.
You will find it at www.jos.nu.

Armstrong, J.A. (1967). Derivation of theory by means of factor analysis or Tom Swift and his electric factor analysis machine. University of Pennsylvania.
You will find it with, for example, Google.

Question 1: Would you say that the methods used by Biemer and Witt (1996) are scientifically sound? Would you say that factor analysis is scientifically sound? Motivate your answer. (3 pages maximum). Do not write a summary of the papers.

Question 2: In a measurement process observed values are denoted by $y_1, \ldots, y_n$ and true values by $\mu_1, \ldots, \mu_n$. The differences, denoted by $\mu_i - y_i = \varepsilon_i$, are viewed as random measurement errors. Give one realistic example where you cannot safely assume that the random measurement errors $\varepsilon_1, \ldots, \varepsilon_n$ are pairwise uncorrelated.

Deadline Friday 14 December at 12 noon, i.e at the start of the lecture. We will discuss these two papers in class and if you have submitted a paper that may be slightly substandard, active participation in discussion will help you out.