Econ 300

Spring 2020

Midterm1 Study Guide*

Midterm 1 will cover the statistics review lecture, introduction lecture and everything on simple and multiple Regressions. Below is a study guide of the main concepts you need to know for the exam.

*The aim of this study guide is to help you study for the midterm, anything said in class/slides can be in the exam, even if not listed below.

Statistics review

- Understand the difference between population and sample
- Know mean, variance, standard deviation, covariance
- Know the difference between (population) parameters and (sample) statistics
- Know what is sampling and what is sampling inference
- Know what central limit theorem means and its importance
- Know what confidence interval means and how to construct it for sample mean
- Know the steps of hypothesis testing and be able to perform it

Introduction

- Be able to translate a problem into a mean comparison
- Know what the naïve and ideal comparison is?
- Be able to explain why the naïve comparison is misleading and why the ideal comparison is not feasible
- Be able to differentiate between different types of data
- Know what categorical and dummy variables are

Simple regressions

- Know that the aim of the best fit line is to be minimize the residual sum of squares
- Be able to interpret regression coefficients
- Understand predicted value and how it is different from the actual/observed value
- Know the difference between population regression and sample regression
- Know the difference between error term and residual

Simple regressions – hypothesis testing

- Know what null hypothesis/alternative hypothesis mean
- Know the meaning of confidence interval
- Be able to make decision using t-statistics and p-value
- Be able to make decisions using confidence intervals

Multiple regressions

- Be able to interpret regression coefficients (don't forget "holding other explanatory variables fixed"!)
- Understand what is omitted variable bias
- Need to know the conditions for omitted variable bias
- Understand how to determine the direction of omitted variable bias
- Know how to read STATA output
- Know how to construct null hypothesis.