EC220-PS4
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Office hour: on Monday in S684
from 16:30 to 17:30
PS4 grades

D C B- B B+ A- A

PS1  PS2  PS3  PS4
Big picture

Statistical background

Simple regression (one explanatory variable)

Multiple regression (several explanatory variables)

- How to construct estimators (OLS)
- Good properties of estimators
- Properties of OLS estimator (assumptions)
- Hypothesis testing
- Properties of OLS estimator
- Interpretation of the estimates
- New “issue”: multicollinearity
- The problems than can occur in practice.
Main mistakes for 3.2

- Interpretation of the multiple regressions’ estimates “holding the other explanatory variables constant” (here SM, SF, ASVABC)
- Do not state your conclusion: does SM, SF matter? Is SM more important than SF?
- You are supposed to use the t-tests to prove that SM/SF matters (one sided?).
- We will see later how to show if beta(SM) is or not larger than beta(SF).
- In the last regression, SF and SM correlated. Issue of collinearity. This is a concern but not a major concern as we are interested in comparing the estimates of SM and SF.
Main learning outcomes from 3.8

• Be able to state which factors are really important (su)

• Be able to state what is the meaning of su (it is $1/(n-k)\times\text{RSS}$) so in this case (n-k are the same) it is the difference in the quality of fit of the model for the two populations.

• Be able to give an intuitive explanation why $\text{se}(b_k)$ is lower when MSD(X_k) increases.

• R_k. The formula is only valid when we have 2 explanatory variables but the intuition remain the same when this number is >2.
Main mistakes for 3.11

• Do not state the main issue (multicollinearity). Should use “key words” during the exam.

• When looking at regression results the main outcomes of interests are:
  – 1) estimates
  – 2) standard-errors

• Multicollinearity is a tricky question. In general this is not a major concern but if the correlation is very high this may be the case.

• Impact on the estimators:
  – Are they biased? (No)
  – Are their s.e.s wrongly estimated? (No)
Main mistakes for 3.15

This is a very simple exercise and you should all be able to do it perfectly.

**Crimes**

- Do not state Ho/H1
- Do not state the significance level, do not used the correct one (0.1% if possible)
- Do not give a conclusion in words.
- Do not state the dfs used to compute F-crit.

**How to write it?**

- First state your model and the relative Ho/H1
- Give the book formula for the F-test.
- Perform the computations: RSS, dfs...