

## ECO220Y: Homework, Lecture 14

**Readings:** Chapter 12

**Exercises:** Chapter 12: 3, 5, 10, 12, 21

**Problems:**

**(1)** Is it always true that the probability of accepting the null hypothesis when it is, in fact, correct is greater than the probability:

(a) of rejecting the null hypothesis when it is false?

(b) of accepting the alternative hypothesis when it is true?

**(2)** A researcher wants to show that a subject has a statistically significant ability to predict the outcomes of coin flips. The conventional null hypothesis is that the probability of correct prediction is  $p=0.5$ . If a test consist of 50 coin flips, then how many must this subject predict correctly for the probability of Type I error to be about 5 percent?

**(3)** A grade 7 student made a wooden die in wood shop. The instructor suggested that this die looked a bit lopsided, so that the number 6 might not come up exactly one-sixth of the time. In 18,000 careful rolls of this die, the number 6 came up 3126 times. Is this difference from 3000 (predicted number of times the number 6 should have come up):

(a) statistically significant?

(b) practically significant?