**EE 325 Section 2 Quiz #8**

**Answers**

1. To study the rate of growth of population in Belize over the period 1970-1992, Mukherjee et al. estimated the following models:
   Model I:

$$\widehat{\ln(Pop)}_t = 4.73 + 0.024t$$
$$t = (781.25)\ (54.71)$$

   Model II:

$$\widehat{\ln(Pop)}_t = 4.77 + 0.015t - 0.075\ D_t + 0.011 D_t t$$
$$t = (2477.92)\ (34.01)\ \ (-17.03)\ \ (25.54)$$

   where Pop = population in millions, t = trend variable, $D_t = 1$ for observations beginning in 1978 and 0 before 1978, and ln stands for natural logarithm.

   a. In Model I, what is the rate of growth of Belize's population over the sample periods?

**2.4%**

   b. Are the population growth rates statistically different pre- and post 1978? How do you know? If they are different, what are the growth rates for 1972-1977 and 1978-1992.

Since both the differential intercept and slope coefficients are highly significant, the levels as well the growth rates of population in the two periods are different.

**The growth rate for the period before 1978 is 1.5% and that after 1978 it is 2.6% (= 1.5% + 1.1%).**