# ECON 5350 Final Exam – Fall 2012

Consider the Keynesian consumption function

$$C_t = \alpha + \beta Y_t + \epsilon_t$$

where $C_t$ is aggregate consumption, $Y_t$ is disposable income, and $t = 1, ..., T$.

1. (20 pts) Under what condition is the OLS estimate of $\beta$ unbiased? consistent? efficient? Also, describe the sampling distribution for the OLS estimator of $\beta$.

2. (20 pts) Describe three methods for testing the null hypothesis that $\alpha = \beta$. Which is best?

3. (20 pts) Describe all the required steps to directly test the hypothesis that the government spending multiplier is equal to two. Describe an equivalent method of indirectly testing the same hypothesis. Which method is preferable and why?

4. (20 pts) Consider a permanent structural break in the variance of the errors at $t = t_*$. Describe the procedure for obtaining an efficient estimate of $\beta$. How does this procedure compare to separate OLS estimation before and after $t = t_*$? Explain.

5. (20 pts) Now consider an alternative model:

$$C_t = \ln [\alpha + \beta Y_t] + \epsilon_t.$$

Outline a procedure for least squares estimation of $\beta$ using the Gauss-Newton and Newton-Raphson algorithms.