

**Homework 8. Due Wednesday November 6th.**

1. Use the Matlab panel data program that I have posted. Interpret the regression results (excess sensitivity and excess smoothness). Try and add lagged consumption and more lags of disposable income and interpret the results. Try (in a separate regression) to include state fixed effects—are the results sensitive to this?

2. Prove that, for a standard normal, the integral

$$E\left\{\frac{z}{a+z}\right\} = \int_{-\infty}^{\infty} \frac{x}{a+x} \phi(x) dx,$$

does not exist. (Hint: integrate over an area around  $-a$ .)

Motivation: This shows up as the expectation of the IV-estimator in a very simple case. (I follow Davidson-MacKinnon p. 326-7.) This implies that the simplest IV-estimator can produce total garbage once in a while.