Growth and Development Economics

Raül Santaeulàlia-Llopis
MOVE, UAB and Barcelona GSE

Homework 3, due Friday March 1 at 1.00pm

Question 1. Consumption Insurance Tests

Use panel data for annual household consumption and income from the the Uganda LSMS-ISA to conduct the following consumption insurance tests:

1. Individual insurance in log-level changes:

$$\Delta \ln c_{i,t} = \beta_i \Delta \ln y_{i,t} + \phi_i \Delta \ln \bar{C}_t + \epsilon_{i,t} \tag{1}$$

where $x_{i,t} = \{c_{i,t}, y_{i,t}\}$ are the residuals of household-i consumption and income in period t, respectively, and $\bar{C}_t$ is aggregate consumption. Δ denotes the change between period t and $t+1$, that is, $\Delta x_{i,t} = x_{i,t+1} - x_{i,t}$. If the panel is not balanced, please, annualize the growth rates linearly. To obtain the residuals x (already logged) do the following,

$$\ln X_{it} = cons. + \alpha_1 a + \alpha_2 a^2 + \alpha_3 N_t + \sum_t \alpha_{4,t} \mathbf{1}_t + \sum_e \alpha_{5,e} \mathbf{1}_e + \sum_e \alpha_{6,g} \mathbf{1}_g + \sum_r \alpha_{7,r} \mathbf{1}_r + \ln x_{it}$$

where $X_{i,t} = \{C_{i,t}, Y_{i,t}\}$ is housheold-i consumption and income in period t. That is, residual consumption and income are the result of controlling for head's age (a), squared age, family size N_t, year fixed effects t, ethnicity fixed effects e, head's gender g and rural residency r.

Plot the histogram of β_i and ϕ_i. Also report the mean and median across households of your estimates (notice that there is one β_i and ϕ_i per household). Is full-risk shaing achieved? Discuss your results.

2. On the relationship between insurance and household income/wealth:

   (a) For each household, compute the average household income across all waves $\bar{Y}_i$. Rank individuals by income and define five groups of income from bottom 20% to richest 20%.. Within each income group compute the mean and median β_i and dicuss your results.

   (b) Redo the previous item using quintiles of household wealth (or land size)

   (c) Rank individuals by their estimated β_i and create five groups of individuals from the most insured bottom 20% (i.e, β_i closest to zero) to the least insured top 20% (i.e., β_i farthest way from zeror). Within each group of β's compute average income and wealth across groups. Discuss your results.

3. Modify the previous test in (1) assuming that the coeficients are the same across houselds, so that household variation helps pin down the estimates,

$$\Delta \ln c_{i,t} = \beta \Delta \ln y_{i,t} + \phi \Delta \ln \bar{C}_t + \varepsilon_{i,t} \tag{2}$$

Is full-risk shaing achieved? Discuss and compare your results to the previous specification (1).

4. Redo items 1, 2 and 3 for rural and urban areas separately.

5. On more than two goods [Optional question]:

   (a) Construct the consumption insurance tests that come out from the complete markets economy that we dervied in class, but no associated to households that face the following preferences with two goods, $\ln(c_a - \bar{c}_a) + \kappa \frac{c_m^{1-\eta}}{1-\eta}$, where c_a is food consumption and c_m is nonfood consumption.

   (b) Use your panel data to conduct the tests that you derived. Discuss your results.